TOP MANAGEMENT TEAM DIVERSITY, GROUP PROCESS, AND STRATEGIC CONSENSUS

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This study integrated concepts from upper echelons, group process and social cognition theories to investigate how demographic diversity and group processes influence strategic consensus within the top management team (TMT), where strategic consensus is defined as the degree to which individual mental models of strategy overlap. Data from 76 high-technology firms in the United States and Ireland were used to examine three alternative models. The results showed that while demographic diversity alone did have effects on strategic consensus the overall fit of the model was not strong. Adding two intervening group process variables, interpersonal conflict and agreement-seeking, to the model greatly improved the overall relationship with strategic consensus. For the most part, TMT diversity had negative effects on strategic consensus. The model with superior fit showed both direct and indirect effects of diversity on strategic consensus. Copyright © 1999 John Wiley & Sons, Ltd.

Diversity in groups and teams is often portrayed as a positive force leading to effective functioning of the team. Diversity supposedly leads to greater variance in ideas, creativity, and innovation, thus generating better group performance (Cox, 1993; Jackson, May and Whitney, 1995). In the popular press, diversity is almost always synonymous with gender or ethnic diversity. Research on organizational work groups, however, has focused on other forms of diversity including differences in age, education, firm tenure, and functional or technical background (Jackson *et al.*, 1995).

Cross-functional teams, for example, are by definition designed with deliberate differences in demographic diversity and technical specialization (Ancona and Caldwell, 1992).

In this research, we investigate the effects of demographic diversity within top management teams (TMTs) on group process and strategic consensus. Two related streams of research provide the basis for this study. First, upper echelons theory (Hambrick and Mason, 1984; Finkelstein and Hambrick, 1996) links observable demographic characteristics of top executives to a variety of organizational processes and outcomes. Second, group process theory illustrates how group interpersonal processes work to influence various group and/or organizational outcomes such as firm performance (Shaw, 1981). By integrating these two research streams we hope to

provide a richer understanding of the combined effects of TMT diversity and group processes.

TMT diversity and group process are used in this research to predict strategic consensus. The building of strategic consensus is generally accepted as one of the first steps in the strategy formation process (Dess and Origer, 1987; Nielson, 1981; Lyles, 1981; Bourgeois, 1980, 1985; West and Schwenk, 1996). For example, Whyte (1989: 41) notes that the first task of all decision-making groups is to 'produce consensus from the initial preferences of its members'. Similarly, Floyd and Wooldridge (1992: 27) contend that the successful implementation of strategy requires that managers are 'acting on a common set of strategic priorities'. Studies of strategic consensus have either focused on its link to organizational performance (Bourgeois, 1980, 1985; Dess, 1983, 1987; West and Schwenk, 1996), or on the process of consensus formation (Priem, Harrison and Muir, 1995; Schweiger, Sandberg, and Ragan, 1986; Cosier and Rechner, 1985). In this research, we focus on the process of consensus formation; that is, we treat TMT strategic consensus as a dependent variable.

We advance the strategic consensus literature by conceptually and empirically linking strategic consensus to managerial cognition (Walsh, 1995). More specifically, we utilize a measure of each team member's interpretation of the business-level strategy of his/her firm as a representation of that team member's mental model of the firm's strategy. According to Barr, Stimpert, and Huff (1992: 16), mental models 'consist of concepts and relationships an individual uses to understand various situations or environments'. In this paper, we use the term mental models to refer to clusters of related, though not necessarily causally organized, concepts. When we aggregate individual mental models of strategy to the group level, we assess the level of strategic consensus, which is the extent to which the individual team members' mental models of strategy overlap. Linking the concept of strategic consensus to the underlying mental models of strategy allows us to explore the extent to which shared cognitions of strategy are influenced by TMT diversity and TMT group process. Such relationships have long been assumed (Shaw, 1981; Hambrick and Mason, 1984), but, to our knowledge, not widely tested, in the literature.

The central research question in this study is:

How do TMT demographic diversity and group processes relate to strategic consensus? The research question is broken into two parts. First, how well do measures of demographic diversity alone explain strategic consensus and, second, how does the inclusion of group process measures affect the model? We propose and test four alternative models of how demographic diversity and group process might work to influence the degree of TMT consensus about firm strategy. The sample for this research included top management teams from 83 high-technology firms in the United States and Ireland.

THEORETICAL BACKGROUND

Strategic consensus as a mental model

Hambrick and Mason (1984) argue that the psychological and cognitive characteristics underlying observable demographic measures are critical to the group's processes and subsequent decisions. This is consistent with a growing body of research on managerial cognition (see Walsh, 1995, for a summary) which suggests that managers' mental models will influence the decisions they make (Day and Lord, 1992).

Mental models are similar to knowledge structures (Walsh, 1995), schema (Fiske and Taylor, 1984; Ireland *et al.*, 1987; Sims and Gioia, 1986), and implicit theories (Brief and Downey, 1983). With regard to managers, Mintzberg (1973: 183) observes that 'it is the power of his mental models that determines to a great extent the effectiveness of his decisions'. Kiesler and Sproull (1982: 557) assert that 'managers operate on mental representations of the world and those representations are likely to be of historical environments rather than of current ones'. Prior research has shown mental models to be related to strategies (Day and Lord, 1992), strategic actions, and performance (Thomas, Clark, and Gioia, 1993), and interpretations of and responses to strategic issues (Dutton and Dukerich, 1991).

Scholars have also posited that mental models can operate on the group level and have used terms such as shared cognition, team mental model (Klimoski and Mohammed, 1994), collective cognitive map (Axelrod, 1976) or dominant logic (Prahalad and Bettis, 1986) to describe this phenomenon. Here we use the term 'strategic consensus' to represent the shared cognitions

among team members. This term mainly refers to agreement or overlap among individual team members' mental models of strategy, but does not necessarily imply a deliberative consensus-seeking process.

We contend that each top-level manager will have a mental model or perception of the strategic concepts and their interrelationships that his/her firm uses in an attempt to manage its environment. For example, each manager will have a mental model of the role that various elements (such as innovation, costs, or service) play in the firm's overall strategy. Moreover, we argue that these mental models may vary among TMT members within a given firm. Accordingly, we estimate each manager's mental model or perception of his/her firm's strategy from the responses he/she made to a broad set of 48 questions regarding the firm's strategy. This is an indirect measure of individual mental models. That is, we did not directly elicit the specific mental model of strategy from each subject, but we used a set of terms common in the organizational strategy literature and among executives to develop a quantitative measure of firm strategy.

We use these individual measures to create a group-level measure that we called strategic consensus. We then investigate how TMT diversity and group processes relate to the strategic consensus of the TMT. Our contention is that strategic consensus can result either because TMT members have similar backgrounds (e.g., low diversity), and/or because effective group processes have been utilized to resolve differences in individual mental models of strategy. Although there are other factors that might lead to strategic consensus (such as the fact that managers in a firm are exposed to relatively similar stimuli from both inside and outside the firm), we focus in this research on the specific effects of demographic diversity and group processes.

Demographic diversity

Upper echelons theory builds on the idea of the dominant coalition (Cyert and March, 1963) to propose that executives influence organizational performance through the decisions they make (Hambrick and Mason, 1984). Upper echelons theory suggests that executives will make decisions that are consistent with their cognitive base (Hambrick and Mason, 1984) or executive orientation (Finkelstein and Hambrick, 1996), which consists of two elements: psychological characteristics (including values, cognitive models, and other personality factors) and observable experiences. A fundamental principle of upper echelons theory is that observable experiences (i.e., demographic measures) are systematically related to the psychological and cognitive elements of executive orientation. Upper echelons research employs the use of observable demographic characteristics as proxy measures of executive orientation. Executive orientation works through a perceptual or filtering process that results in what is called managerial perceptions (Hambrick and Mason, 1984) or construed reality (Finklestein and Hambrick, 1996). Managerial perceptions, in turn, influence strategic choices and executive actions.

Research using this theoretical framework has linked the demographic characteristics of top managers and/or the demographic diversity of the TMT to a variety of organizational outcomes including performance (Keck, 1991; Hambrick and D'Aveni, 1992; Michel and Hambrick, 1992; O'Reilly and Flatt, 1989; Smith *et al.*, 1994), strategy (Finkelstein and Hambrick, 1990; Michel and Hambrick, 1992), strategic change (Grimm and Smith, 1991; Wiersema and Bantel, 1992), management turnover (Wagner, Pfeffer and O'Reilly, 1984), and organizational innovation (Bantel and Jackson, 1989; O'Reilly and Flatt, 1989; Smith *et al.*, 1993).

Studies have also found that demographic diversity can influence group processes. In fact, diversity can influence group processes in contradictory directions. For example, diversity has been shown to have negative effects on both group cohesion (Katz, 1982; Lott and Lott, 1961; O'Reilly, Caldwell, and Barnett, 1989) and the frequency or quantity of communication (Smith *et al.*, 1994; Wagner, Pfeffer and O'Reilly, 1984). In addition, diversity tends to lead to increased conflict within the group (Eisenhardt and Schoonhoven, 1990; Wagner *et al.*, 1984) and to increased political activity (Pfeffer, 1981). However, diversity can also lead to enhanced creativity and innovation by generating greater variance in decision-making alternatives (Cox, 1993; Jackson *et al.*, 1995). Consistent with prior TMT research (e.g. Eisenhardt and Schoonhoven, 1990; Hambrick and D'Aveni, 1992; Keck, 1991; Michel and Hambrick, 1992; Smith *et al.*, 1994),

we used measures of diversity in functional background, age, education, and employment tenure as indicators of TMT diversity, and investigated how TMT diversity was related to group processes and to the level of strategic consensus within the TMT.

Group processes

Previous TMT studies have examined the relationships between organizational performance and a variety of group processes. These include comprehensiveness in the strategic decision-making process (Fredrickson, 1984; Fredrickson and Iaquinto, 1989; Fredrickson and Mitchell, 1984), speed in decision-making processes (Eisenhardt, 1989; Flood *et al.*, 1997), and political behavior within top management teams (Eisenhardt and Bourgeois, 1988). Group processes have also been shown to intervene in the relationship between diversity and firm performance (Smith *et al.*, 1994). The central arguments behind the study of group processes pertain either to group processes that provide greater efficiency (e.g., reducing costs or increasing speed in decision-making) or greater effectiveness (e.g., making better decisions). We contend that group processes are likely to influence the level of strategic consensus within a TMT, and examine two important group processes from previous research: interpersonal conflict and agreement-seeking.

Consistent with prior research, we define interpersonal conflict as conflict that relates to emotional or personal relationships between people (Amason, 1996) as opposed to conflict that is task oriented in nature. While previous studies have indicated that there can be different kinds of conflict (Amason, 1996; Cosier and Rose, 1977; Jehn, 1992; Pelled, 1996; Pondy, 1969; Priem and Price, 1991), we chose to focus only on interpersonal conflict in this research. Interpersonal conflict (called social or affective conflict in some research) can have negative consequences for an organization. For example, Amason (1996) found that affective conflict was significantly and negatively related to both decision quality and affective acceptance of the decision. Jehn (1995, 1997) found that member satisfaction with the group was negatively related to social conflict among group members. Accordingly, we built on this research and examined the

impact of interpersonal conflict on the level of strategic consensus within the TMT.

We define agreement-seeking behaviors as those that are intended to produce consensus or agreement among TMT members regarding firm strategy. Gero (1985) found that group members have more confidence in decisions reached through consensual decision techniques (i.e., agreement-seeking techniques) than in those resulting from higher conflict techniques. Previous studies (Schweiger *et al.*, 1986; Schweiger, Sandberg, and Rechner, 1989) have shown that groups using structured methods of task-oriented conflict (such as dialectical inquiry or devil's advocacy) during decision-making produced higher-quality recommendations than groups using agreement-seeking processes. However, agreement-seeking processes led to greater member satisfaction with the group and higher acceptance of their group's decisions. These findings indicate that the type of group process used to manage or direct conflict can influence not only the quality of the decision but the affective responses of group members as well. Because some groups may actively engage in agreement-seeking behaviors (such as not making final decisions until all members of the group agree), the present study built on this research stream and examined the influence of agreement-seeking styles on strategic consensus within the TMT.

TMT diversity, group processes and strategic consensus: Alternative models

Recall, the research question of this study is: How do TMT demographic diversity and group process relate to strategic consensus? A review of the literature suggests alternative explanations or paths. We treat these alternative explanations as three alternative or more finely elaborated models (as portrayed in Figure 1).

Pfeffer (1983: 348) contends that 'demography is an important causal variable that affects a number of intervening variables and processes, and through them, a number of organizational outcomes'. Pfeffer (1983) also questions whether the study of the intervening processes will explain any incremental variation in the dependent variables beyond what could be explained by demographic measures alone. Thus, Pfeffer (1983) would contend that the addition of group process variables would not improve the explanation of
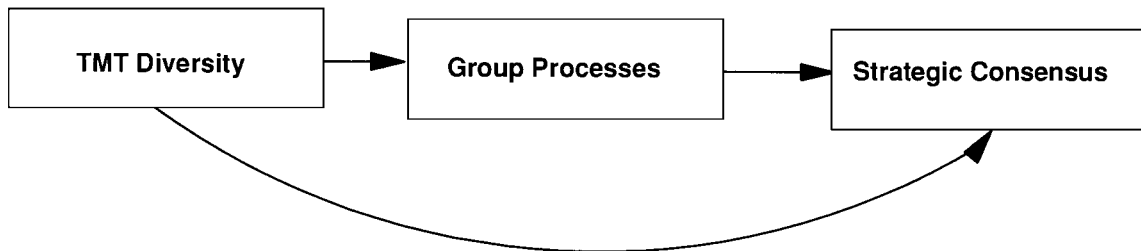
1. Direct Effects Model

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┌─────────────────┐                              ┌─────────────────────┐
│  TMT Diversity  │ ───────────────────────────▶ │ Strategic Consensus │
└─────────────────┘                              └─────────────────────┘
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2. Partially Mediated Model

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┌─────────────────┐      ┌─────────────────┐      ┌─────────────────────┐
│  TMT Diversity  │ ───▶ │ Group Processes │ ───▶ │ Strategic Consensus │
└─────────────────┘      └─────────────────┘      └─────────────────────┘
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3. Fully Mediated Models

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┌─────────────────┐      ┌─────────────────┐      ┌─────────────────────┐
│  TMT Diversity  │ ───▶ │ Group Processes │ ───▶ │ Strategic Consensus │
└─────────────────┘      └─────────────────┘      └─────────────────────┘
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Figure 1.   Alternative models relating TMT diversity, group processes, and strategic consensus

strategic consensus. Also, demographic variables may directly influence strategic consensus in addition to any influence expressed through group processes. Consistent with Pfeffer (1983), the first part of the research question is how well measures of demographic diversity alone explain strategic consensus, and we first examine whether there is a direct relationship between demographic diversity and strategic consensus without considering the effects of group processes. We label this model the 'direct effects' model in Figure 1.

Finkelstein and Hambrick (1996) and Priem (1990) suggest that demographic diversity will be negatively related to strategic consensus. Demographic diversity within a TMT reflects differences in experiences among its members, which should result in differences in individuals' mental models. Differences in mental models should, in turn, be reflected in differences in the way that individual TMT members characterize or understand firm strategy. For example, Ireland *et al.*, (1987) posit that people of similar age are likely to have similar values and beliefs because their life experiences are similar. Similarly,

Pfeffer (1983) suggests that individuals from different age cohorts will have significantly different values and perspectives. Hambrick, Cho, and Chen suggest that demographic heterogeneity will lead to 'dispersion in the group's perspective' (1996: 664). This dispersion in perspectives (or construed reality as Finkelstein and Hambrick, 1996, term it), which may arise from different life or unique organizational experiences, make it less likely that members of a TMT will have the same mental models of firm strategy.

More specifically, if cognitions or mental models of the individual manager are based on his/her past experiences and values as Kiesler and Sproull (1982) suggest, then differences in experience should result in differences in mental models. Thus, if past experiences are represented by a surrogate measure—demography—we expect differences in demography to be related to differences in managers' cognitions. For example, a marketing vice-president might have a different mental model of organizational strategy than a finance vice-president (e.g., 'First on the market' vs. 'Profits through tight cost control'). Therefore,

the literature suggests a direct effects model whereby diversity in functional position, age, education, and employment tenure will be negatively related to the level of strategic consensus.

In contrast to Pfeffer, other research (Gist, Locke, and Taylor, 1987; Smith *et al.*, 1994) suggests that the study of intervening group processes is important. With regard to strategic consensus, Langfield-Smith (1992) proposes that social (i.e., group) processes will have an important effect on the development of shared cognitive maps. Ford and Baucus (1987) suggest that individual cognitive interpretations will be shaped by the personal contexts in which the individual operates. Even if Pfeffer (1983) is correct, the study of potentially intervening group processes is still important as their effects on the organization may be easier to control or alter than the effects that arise from the group's demographic characteristics. In addition, group processes may, in fact, be useful in overcoming some of the potentially negative consequences of demographic diversity. Therefore, we also examine a set of intervening models to assess whether inclusion of two group process measures—interpersonal conflict and agreement-seeking—improves the explanation of strategic consensus, and, if so, which intervening model is most appropriate to the data.

If group processes influence the cognitions of TMT members, then it is reasonable to believe that interpersonal conflict within the TMT may diminish shared cognitions about firm strategy. In fact, as Jehn (1995: 257) notes, conflict has been defined as 'perceptions by the parties involved that they hold discrepant views'. Minkes (1994: 80) defined conflict as 'imperfect compatibility of views which necessarily follows from the variety of human beings'. This suggests that differences in mental models or construed realities cannot exist without conflict. Research on group cohesiveness (Shaw, 1981), which might be interpreted as the inverse of interpersonal conflict, suggests that interpersonal conflict may reduce strategic consensus. Moreover, while interpersonal conflict may provoke disagreements about what firm strategy should be, it is also likely to result in different perceptions or interpretations about what current firm strategy actually is. Conflict that is personal or emotional in nature may result in or even create disagreements about a wide range of issues. This may be particularly true

when dealing with firm strategy since it involves a high degree of uncertainty and ambiguity (Eisenhardt, Kahwajy, and Bourgeois, 1997). Accordingly, we expect that interpersonal conflict among TMT members will be negatively related to strategic consensus. That is, when interpersonal conflict is high within the TMT the differences in perceptions or mental models of what the firm's current strategy is will be greater and strategic consensus as we measure it will be lower.

Another important group process identified in previous research is the manner in which groups make decisions. As noted above, prior studies (Schweiger *et al.*, 1986, 1989) found that groups using agreement-seeking behaviors achieved higher levels of consensus than groups using processes that incorporated structured systems of task-oriented conflict. Consistent with this literature, we expected that the use of agreement-seeking behaviors by TMTs (i.e., behaviors intended to foster agreement among team members) would be positively related to strategic consensus (i.e., there would be greater similarity among team members' interpretations or mental models of strategy).

Since prior research offers little direction on the precise relationships among the variables, we analyze two possible intervening models. Model 2, designated as the 'partially mediated model', assumes that demographic diversity will have both direct and indirect effects on the level of strategic consensus. Model 3, which is labeled the 'fully mediated model', assumes that TMT demographic diversity will have no direct effect on strategic consensus but will directly affect the intervening group processes which, in turn, will affect strategic consensus.

With regard to the intervening models, the question of relationships between the TMT demographic measures and the intervening group processes, and relationships between the two group process measures (interpersonal conflict and agreement-seeking) must be addressed. In general, we expect demographic diversity will be positively related to interpersonal conflict within the team. This is consistent with prior research such as that of Zenger and Lawrence (1989), who found that heterogeneity can lead to conflict. Similarly, with regard to agreement-seeking, we propose that demographic diversity will be negatively related to the use of agreement-seeking

behaviors within the TMT. This is also consistent with prior research. For example, heterogeneity has been found to impede other group processes, such as communication between team members (O'Reilly *et al.*, 1989, Smith *et al.*, 1994), which cause us to believe that it will have a negative impact on the use of agreement-seeking behaviors.

Finally, the question of a relationship, if any, and the direction of that relationship between interpersonal conflict and agreement-seeking must be addressed. It is reasonable to expect that interpersonal conflict and agreement-seeking would be related. However, there remains the question of exactly how these two group processes are related. In this research, we proceed with the expectation that interpersonal conflict would likely precede and affect the degree to which TMT members are willing to adopt agreement-seeking decision processes within the team. This is consistent with other researchers, such as Jehn (1997: 531), who suggests that 'relationship conflicts interfere with task-related effort'. Accordingly, we expect that interpersonal conflict will be negatively related to the use of agreement-seeking behaviors within a TMT, since agreement-seeking is a task-related undertaking. We also expect that agreement-seeking behavior will intervene in the relationship between interpersonal conflict and strategic consensus.

METHOD

Sample

The sample for this study consisted of the TMTs of 83 high-technology firms located in the mid-Atlantic region of the United States and a group of subsidiaries of U.S. multinational firms operating in Ireland. Data used in this research were developed from CEO interviews and from comprehensive questionnaires that were completed by the members of the top management team at each company. The companies included in the sample were involved in a variety of technology-related businesses including information technology, research (biotechnology and aerospace), hazardous waste management, and defense. The sample included both large and small firms, both publicly and privately owned, and, in the Irish sample, subsidiaries of U.S. multinational companies.

The U.S. sample contained 56 companies from 114 originally contacted. An almanac profiling high-tech or technology-intensive firms that were part of a technology and research and development consortium was the original source used to identify the firms. Forty-seven firms were dropped from the sample after initial contacts for a variety of reasons, including unwillingness to participate, mistaken identification (e.g., were low-technology), mergers, diversification, or because the firm had gone out of business. Interviews were conducted with the CEOs of the remaining 67 firms (an initial response rate of 59%).

The personal interviews served two purposes. First, it allowed the researcher to explain more fully the goals of the study and to obtain the CEO's approval and endorsement of the study. The study design called for the CEO to identify each of the team members and for each team member to complete a questionnaire. Second, as part of the interview, the CEO initiated a memo to each top management team member, which requested participation in the study and served to endorse the study, increasing the likelihood of participation.

Usable responses were received from 53 of the 67 CEOs interviewed, for a participation rate of 79 percent of the final population (47% of those originally selected). The size of companies in the sample, measured in gross sales, ranged from \$200,000 to \$162 million. Mean sales were \$29 million, with a standard deviation of \$32.5 million and a median of \$17.8 million. The mean size of firms in number of employees was 357, with a standard deviation of 395, while the median number of employees was 225.

The companies that did not participate in the study were involved in similar kinds of businesses to the firms included in the final sample. A one-way analysis of variance on gross sales indicated that responding firms were not significantly different from nonresponding firms in terms of size ($F = 1.85$; $p < 0.18$; $N = 114$).

Hambrick and Mason's (1984) upper echelons theory suggested that researchers can identify members of a top management team simply by equating executive titles with membership in the team, and some recent studies of top management teams have used this approach (Norburn and Birley, 1988; Tushman, Virany, and Romanelli, 1989; O'Reilly and Flatt, 1989; Keck, 1991). However, to more closely approximate Cyert and

March's (1963) notion of the dominant coalition, we asked each CEO to identify the members of his or her 'real' top management team. Of those identified, 78 percent were also officers of the corporation.

All members of the top management team, including the CEO, were asked to complete questionnaires. From the 286 questionnaires requested from team members, a total of 230 usable ones were returned. Eighty percent of the team members who were asked to complete the questionnaire did so, and the average number of questionnaires returned per firm was 4.5.

In the Irish sample, 60 percent of the companies contacted agreed to participate, yielding a final sample of 26 companies. From these 26 companies, 98 usable questionnaires were returned (approximately 3.77 per firm). Combining the samples resulted in an overall response rate of 45 percent across both subsamples.

The questionnaires consisted of a group of demographic and process-oriented questions, and a series of questions designed to assess various aspects of each executive's mental model of firm strategy. The respondents were members of the company's TMT, which included the CEO. The unit of analysis was the TMT.

Demographic diversity variables

Four measures of TMT diversity, drawn from prior studies in upper echelons theory, were used in this study. To measure functional diversity, team members were asked to indicate the functional category that most closely represented their background; functional diversity was calculated in terms of Blau's (1977) heterogeneity index: $(1 - \Sigma i^2)$, where i is the proportion of the group in the ith category. A high score on this index indicates variability in the functional responsibilities among team members or functional diversity, while a low score represents greater functional homogeneity.

Age diversity was computed as the coefficient of variation in age of the members of the team. Educational diversity was computed as the coefficient of variation of the number of years of postsecondary education across team members. Employment tenure diversity was the coefficient of variation on the number of months each team member had been employed by their current company.

Group process variables

Two group process measures were assessed in this research: interpersonal conflict and agreement seeking. Interpersonal conflict was defined as conflict that was emotional or person oriented in nature rather than task or issue oriented (Amason, 1996). It was measured with a five-item, Likert-type scale where one represented 'definitely not true' and five represented 'definitely true'. The questions included items such as, 'The members of the TMG get along together very well' and 'Relationships between members of the TMG are best described as "win–lose;" if he/she wins, I lose'. Cronbach's alpha for the interpersonal conflict scale was 0.84. (See Appendix 1 for the list of items included in this measure.)

Agreement-seeking was defined as the degree to which TMT members worked together in order to achieve consensus or reach agreement on strategic issues. It was also measured using a five-item, Likert-type scale where one represented 'definitely not true' and five represented 'definitely true'. The questions included items such as, 'When making decisions, the TMG works hard to reach a decision', and 'TMG decisions are not final until all members agree that the decision is acceptable to them'. Cronbach's alpha for this six-item scale was 0.79. (See Appendix 1 for the list of items included in this measure.)

To assess the appropriateness of aggregating individual responses to the team level, we employed two techniques recommended by other researchers. First, the James, Demaree, and Wolf (1984) $r(WG(J))$ procedure was used. This procedure produces a measure of agreement among respondents and 'it provides the justification for aggregation' (Koslowski and Hattrup, 1992: 162). The $r(WG(J))$ for the interpersonal conflict scale was 0.97 and the $r(WG(J))$ for the agreement-seeking scale was 0.96, both indicating high levels of agreement within teams, thus suggesting that aggregation is appropriate. Second, using the technique recommended by Dansereau, Alutto, and Yammarino (1984) we performed a within-and-between analysis (WABA). Generally, the ratio of the calculated eta-squared between to eta-squared within should be greater than 1 in order to justify aggregating individual level responses. The ratio for the interpersonal conflict scale was 1.046 and for the agreement-seeking scale was 1.009. Therefore, our data met the criteria for

aggregation using two commonly accepted techniques.

Strategic consensus

Strategic consensus was an outcome measure of similarity among TMT members' interpretations about the firm's strategic orientation. In essence, the measure attempted to determine the degree to which the top management team shared a common mental model with regard to the current strategy of the organization.

The strategic consensus variable was created from responses to 48 Likert-type questions regarding firm strategy asked of each participant. Our conception of strategic consensus was very broad and informed by the strategic management literature (e.g., Miles and Snow, 1978; Porter, 1980) and TMT interviews. We used a very broad conceptualization to capture the great variety of viewpoints in the firm's strategy that are represented in both the conceptual and empirical strategic management literature and in the viewpoints of executives. From strategic management scholars, such as Porter (1980), we included the firm's emphasis on costs, price, market differentiation, and product/service differentiation. From Miles and Snow (1978), we added the firm's emphasis on risk, innovation, and proactiveness. Research of MacMillan, McCaffrey, and Van Wijk (1985) and Chen, Smith, and Grimm (1992) provided dimensions of competitive timing of firm's strategic actions. From Eisenhardt (1989) we included the speed of the firm's strategic behavior. Interviews with executives participating in the study provided additional insights into strategic variables. Examples of these items included the extent to which the firm emphasized total quality, product specialization, customization, branding, after sales support, and an accentuation on strategic change. Each item was answered using a five-item Likert response format with anchors ranging from one to five, where one indicated 'definitely not true' and five indicated 'definitely true.' (See Appendix 2 for the list of items included in this measure.)

The computation of the final variable was generally consistent with the previous work of Bourgeois (1980) and Dess (1987) and was done as follows. First, within each team, a standard deviation was calculated from the responses for each of the 48 items. Next, these 48 standard deviations were summed within each team. Since we had named the variable 'strategic consensus', which reflects agreement, we reversed the direction of this score by multiplying by −1. Thus, for the final metric, high scores implied consensus (i.e., high similarity among TMT members' mental models), while low scores implied lack of consensus. This measure, that we called 'strategic consensus', was an indirect estimate of the degree to which top management shared a mental model with regard to the strategy of the organization. It is important to note that the measure was not an objective measure of the actual strategy, but rather was a surrogate measure of the extent to which the top management team possessed a shared viewpoint—a common 'mental model'—about the strategy.

Data analysis

Structural equation modeling using LISREL (version 8.12a) was used to determine whether the pattern of relationships observed among the variables was consistent with any of the four alternative models proposed above. The alternative models examined in this research represented a set of fully nested models. Since we were interested in determining if one of the four alternative models was superior to the others, structural equation modeling was particularly appropriate for this research. Unlike some other analytical techniques, structural equation modeling allows for assessment of the fit of the data to the hypothesized model(s), and, especially important for us, a comparison of fit among alternative models can be made.

Joreskog and Sorbom (1993: 26) suggested using the following formula to compute the minimum sample size for estimation of the asymptotic covariance matrices:

$$\frac{k\,(k-1)}{2}$$

where k equals the number of variables. The maximum number of variables in this research was 8, resulting in a recommended minimum sample size of 38—substantially smaller than our final sample size of 76 cases.

An additional underlying assumption of maximum likelihood estimation is that all variables are normally distributed (Hayduk, 1987;

Table 1.   Means, standard deviations, and intercorrelations ($N = 76$)

Variable	Mean	S.D.	1	2	3	4	5	6	7	8
1. Interpersonal conflict	2.401	0.533	1.00							
2. Agreement seeking	3.246	0.538	−0.62**	1.00						
3. Strategic consensus	−36.397	6.463	−0.11	0.026*	1.00					
4. Location	0.737	0.443	−0.03	0.00	−0.07	1.00				
5. Functional diversity[a]	0.175	0.133	0.26*	−0.12	−0.024*	−0.04	1.00			
6. Age diversity	0.157	0.068	0.046	−0.0185†	−0.13	−0.17†	0.19†	1.00		
7. Educational diversity[b]	−0.469	0.252	0.03	−0.06	−0.21*	−0.19*	0.03	0.12	1.00	
8. Employment tenure diversity	0.600	0.307	0.13	−0.09	0.02	0.32**	0.18†	0.09	0.01	1.00

†$p < 0.10$; *$p < 0.05$; **$p < 0.01$
[a]This variable was transformed using a power transformation. The descriptive statistics are pre-transformation.
[b]This variable was transformed using a natural log transformation. The descriptive statistics are pre-transformation.

Tabachnick and Fidell, 1996). To address this, we screened all variables and found that two variables did not satisfy this condition. In accordance with standard procedures (Hayduk, 1987; Tabachnick and Fidell, 1996) we did transformations of these two variables. Education diversity was transformed using a logarithmic function and functional diversity was transformed using a power transformation. Following the transformations, both met all conditions for normality.

Finally, in order to test for systematic differences between the two subsamples, location was included as a control variable, and was entered as a dummy variable with U.S. companies coded as one and Irish companies coded as zero.

RESULTS

Descriptive statistics for the variables in this study and the correlation matrix of transformed variables are provided in Table 1.
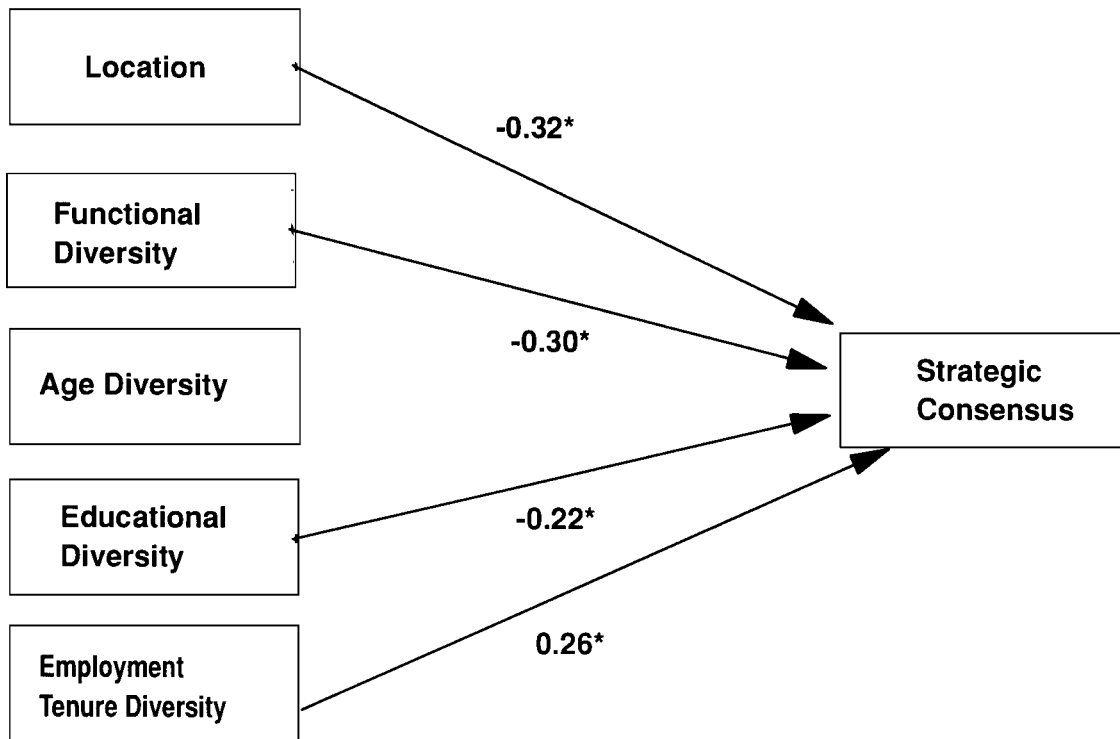
The first research question was how well demographic diversity alone explained the level of strategic consensus within the TMT. Four measures of demographic diversity were used with location included as a control variable, and the results for the direct effects model are presented in Figure 2. Although all relevant paths were tested, only those paths that were significant were included in the figure. Of the four measures of demographic diversity, functional diversity, educational diversity, and employment tenure diversity were significant, and with the exception of employment tenure diversity the direction of the relationships was negative, as expected. Location,

which was included to test for systematic differences between the U.S. and Irish samples, was significant, indicating that the level of consensus was lower for U.S. firms. The squared multiple correlation (analogous to an R^2) for this model was 0.17.[1] However, the fit statistics for this direct effects model (summarized in Table 2) indicated that the data did not fit the hypothesized model well. Therefore, although several of the relationships were significant and in the expected direction, the 'direct effects' model did not represent the data well.

We next addressed the question of whether including intervening group process variables would increase explanatory power. The second group of models posited that the effects of demographic diversity on the level of strategic consensus would be mediated, either partially or fully, by interpersonal conflict and agreement-seeking. Accordingly, we examined a set of fully nested models with respect to the effects of TMT diversity and group processes on strategic consensus. LISREL facilitated the examination of these alternative tests of the research question by allowing comparisons of fit between the competing hypothesized models. Three mediated models are shown in Figures 3–5. For clarity of interpretation, only the significant paths were indicated although all relevant paths were tested.

Figure 3 represents a partially mediated model, in which both direct and indirect effects of all the variables on strategic consensus were allowed.

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[1] For all models, we tested alternative calculations of the measures (i.e., standard deviation instead of coefficient of variation) and the results were similar.
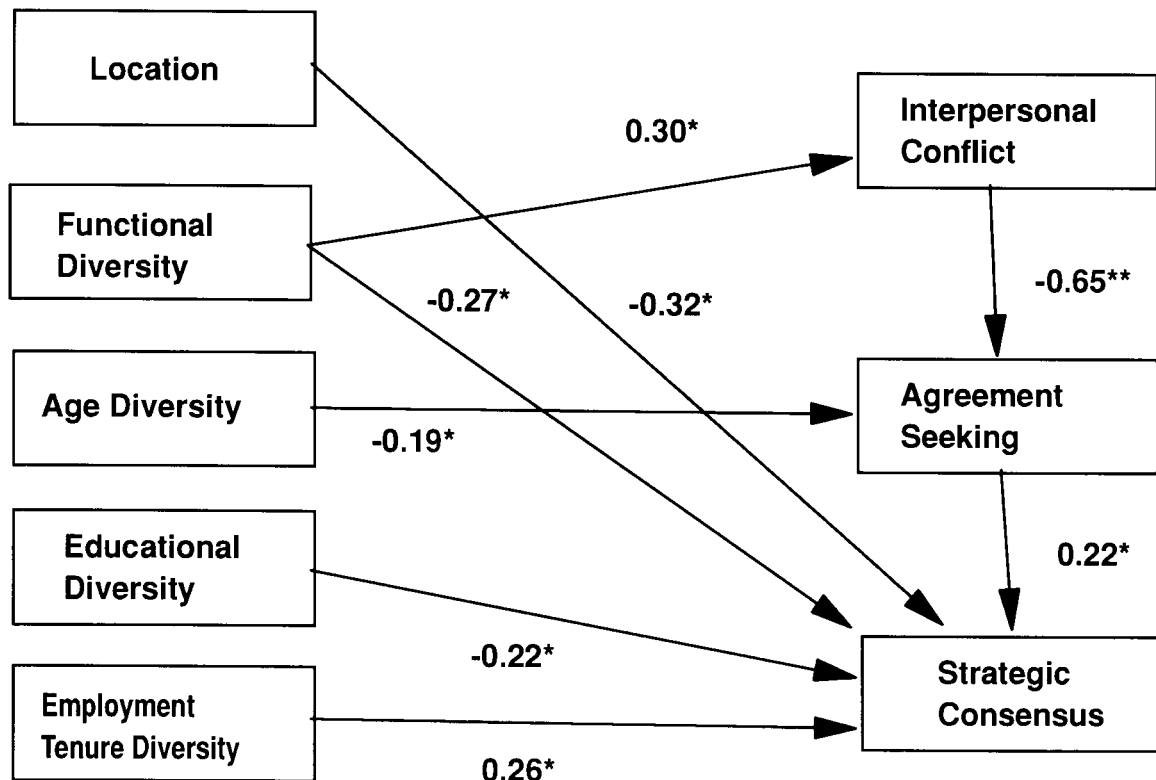
Figure 2.   Direct effects model

Table 2.   Statistics from structural equation modeling

Model	d.f.	χ^2	GFI	AGFI	AIC	CFI
Direct effects model	13	56.40[a]	0.87	0.63	102.40	0.48
Partially mediated model	1	1.19[b]	1.00	0.86	71.19	1.00
Fully mediated model (A)	6	13.75[c]	0.96	0.76	73.75	0.91
Fully mediated model (B)	11	18.67[d]	0.94	0.82	68.67	0.91

[a]$p = 0.00000023$; [b]$p = 0.27$; [c]$p = 0.033$; [d]$p = 0.067$

Table 3.   Squared multiple correlations for all models

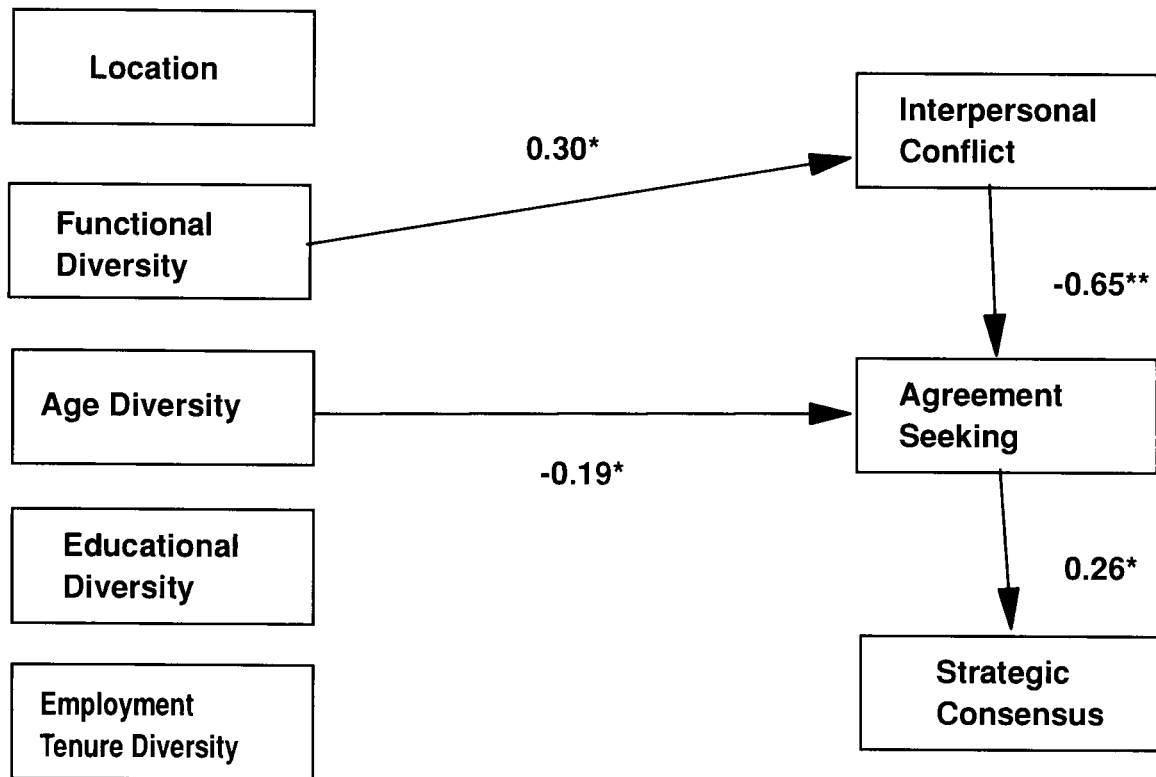| Model	Strategic consensus	Agreement seeking	Interpersonal conflict
Direct effects model	0.17	NA	NA
Partially mediated model	0.21	0.43	0.11
Fully mediated model (A)	0.07	0.43	0.11
Fully mediated model (B)	0.07	0.39	0.11

+ p ≤ .10   * p ≤ .05   **p ≤ .01

Figure 3.   Partially mediated model

Figure 4, Model A, reflects a model where demographic diversity was allowed to influence both group process variables, but was not allowed a direct effect on strategic consensus. Figure 5, Model B, portrays a model where demographic diversity was allowed to influence only the group process variable of interpersonal conflict. We proposed these alternative models to investigate which represented the best fit with the data. For all of the intervening models we considered the reverse relationship between interpersonal conflict and agreement-seeking although we believed that the indicated direction made the most sense. The models including the reversed path did not fit the data as well as the models presented.

As noted previously, one advantage of structural equation modeling is that a variety of techniques may be used to assess the appropriateness of hypothesized models and to compare the fit among alternative models. LISREL generates a variety of tests that can be used to assess fit. Since no one test has been judged superior to the others, we calculated and compared several so that we could more adequately assess which model was the best. The chi-square statistic, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), the Akaike Information Criterion (AIC) (Akaike, 1973), and the comparative fit index (CFI) were used to assess and compare the fit of the direct effects model and the three hypothesized group process models. These statistics are presented in Table 2 for all four models. With the chi-square test, the preferred outcome is that the chi-square is nonsignificant. When using the GFI, the AGFI, or the CFI, the closer to one the better the fit of the model. With regard to the AIC, the lower the number, the better the fit.

Overall, the fit statistics indicated that all three intervening models fit the data. Thus, one con-
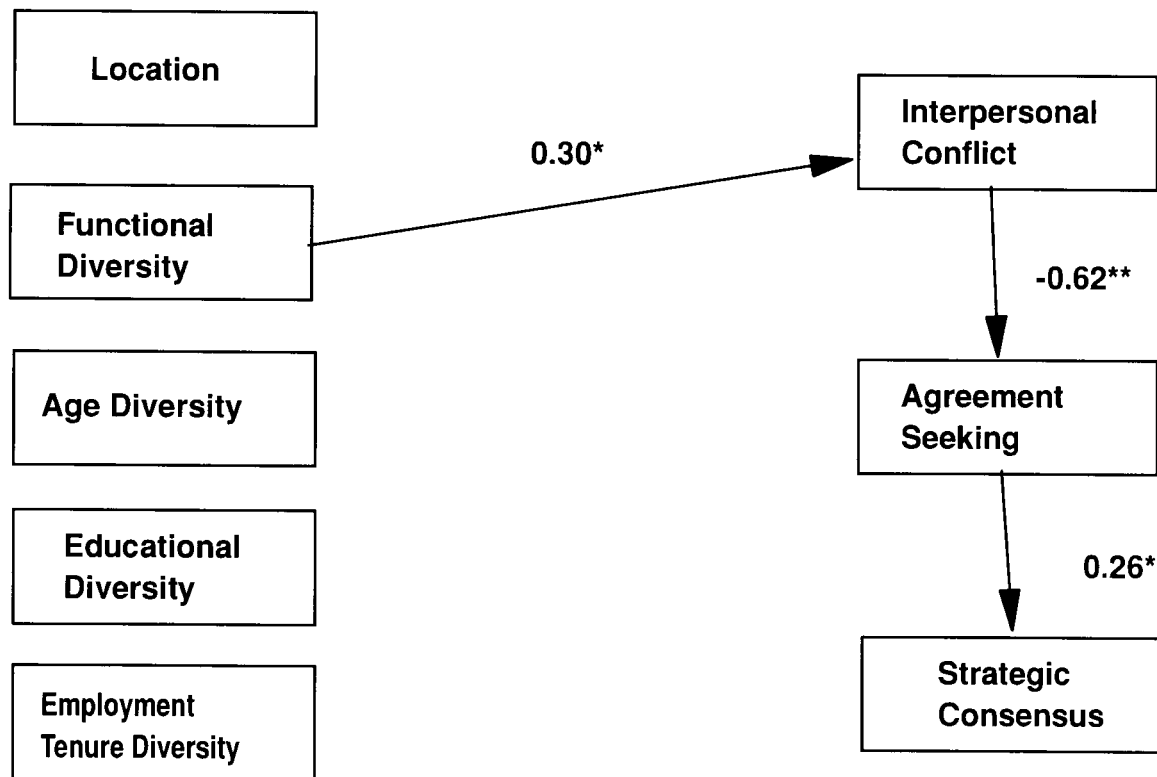
Figure 4. Fully mediated model A

clusion that could be drawn was that group processes did, in fact, intervene in the relationship between TMT diversity and played a significant role in the level of strategic consensus within the TMT.

We also wanted to determine which intervening model was the best representation of the actual relationships between TMT diversity, group processes and strategic consensus since these issues have not been fully examined in prior research. To do this, we compared the fit of the three intervening models to see which was superior. Based on the indicators in Table 2, it was clear that the best model overall was the partially mediated model. The chi-square statistic associated with the partially mediated model was 1.19 with 1 degree of freedom ($p = 0.27$), the goodness of fit index was 1.00, the adjusted goodness of fit index was 0.86, the AIC was 71.19 and the CFI was 1.00, all indicating that

the proposed model fit the sample data well. In addition, the partially mediated model was best on three of the four tests of fit, and second best on the remaining test. This indicated that the partially mediated model was more appropriate to the data than either of the fully mediated models or the direct effects model. In addition, the squared multiple correlations for strategic consensus, agreement seeking and interpersonal conflict (presented in Table 3) clearly indicated that the partially mediated model was superior to the others in terms of the amount of variance explained.

Because it was the best-fitting model, we focused our attention on the partially mediated model to interpret the details. As shown in Figure 3, both TMT diversity and group processes had significant impacts on strategic consensus. With regard to the demographic measures of diversity, functional diversity and educational diversity were

Figure 5. Fully mediated model B

negatively related to strategic consensus, as expected. Contrary to our expectations, employment tenure diversity was positively related to strategic consensus, and age diversity was not significantly related to strategic consensus. Finally, location was positively related to strategic consensus, indicating that consensus was higher in the Irish firms. In addition, as we proposed, age diversity had a negative impact on agreement-seeking (i.e., age diversity reduced team efforts at agreement), while functional diversity had a positive relationship to interpersonal conflict (i.e., as functional diversity increased interpersonal conflict also increased). None of the other relationships between demographic diversity and group processes were significant. The results with regard to the group process variables were as expected. That is, interpersonal conflict had a negative relationship with agreement-seeking behavior, and, in turn, agreement-seeking had a

positive relationship to strategic consensus. Thus, overall, diversity was found to have both direct and indirect effects on strategic consensus, and these effects were primarily negative as proposed.

DISCUSSION

This research examined the relationships between demographic diversity, group processes, and strategic consensus in a sample of 76 high-technology firms in the United States and Ireland. Our conceptualization was inspired by upper echelons theory (Hambrick and Mason, 1984), the group process literature (Shaw, 1981; Stogdill, 1959), and the social cognition literature (Sims and Gioia, 1986; Walsh, 1995). By treating strategic consensus as representative of underlying TMT mental models, we cast some initial light on factors that can influence the content of managers'

mental models and the degree to which that content is shared among members of a TMT.

This research makes several important contributions. First, by demonstrating systematic relationships between demographic measures and one measure of executive cognition, we validate an important assumption of upper echelons theory. Second, our results support the contention of other researchers that demographic diversity would be negatively related to consensus. Although not all of our results were as we proposed, the general impact of diversity on strategic consensus was negative. Third, our results indicate that some dimensions of diversity do influence group processes. Finally, the results suggest that group processes do, in fact, add important information about strategic consensus beyond what demographic measures alone explain.

These findings lend some weight to Walsh's (1995) discussion of the formation of managerial cognitions, in which he posits that individuals' knowledge structures are formed on the basis of both differences in origins (e.g., experience or demographic background) and differences in the more immediate environmental context (e.g., group process). This research suggests that differences in origins (i.e., demographics) may lead managers to interpret firm strategy differently, thus resulting in a lack of agreement in TMT mental models about the firm's strategic orientation. The issue of group processes is somewhat less clear since group processes are shared within a specific TMT. This study does suggest that group processes play an important role in shaping a manager's mental models of his/her firm's strategy. Although group processes are shared by TMT members, they may still result in some differences in mental models between individuals. For example, all team members may not perceive the group processes similarly due to differences in experience (i.e., demography). In addition, group processes may influence shared cognitions differently due to differences in values among the members or to the affective nature of the particular group process (e.g., interpersonal conflict).

More specifically, the first research question addressed how well demographic measures of diversity alone explained the level of strategic consensus within the TMT. Of the four diversity measures, functional diversity and educational diversity were significant, and the direction of both relationships was negative, as expected.

However, the direct effects model, which included only measures of demographic diversity, was unsatisfactory as a whole, since the fit statistics indicated that the hypothesized model did not fit the data well.

The second research goal of this study was to explore the nature of the relationships among team diversity, group processes, and strategic consensus. We tested a series of three fully nested models in order to determine whether a partially mediated or fully mediated model best fit the data. The results showed that the partially mediated model provided the best empirical representation of the data. That is, the model that included both direct and indirect effects of demography on strategic consensus was superior. The indirect effects showed the influence of demography on strategic consensus was partially mediated by group processes. Generally, with one exception, diversity had a negative effect on strategic consensus.

However, although we proposed that our measures of demographic diversity would affect the intervening group processes and strategic consensus similarly, we found that this was not always true. For example, although we proposed that all measures of diversity would be negatively related to strategic consensus, in the best-fitting model (the partially mediated model) employment tenure diversity had a positive effect on strategic consensus, contrary to our expectations. In addition, we proposed that all measures of demographic diversity would be positively related to interpersonal conflict and negatively related to agreement-seeking behaviors within the teams. However, in each case only one of the demographic measures had a significant influence on either group process variable (although in both cases the direction of the relationship was as we expected).

The question we must address is why we did not find all of the relationships that we proposed. There are several possible explanations including the nature and size of our sample or the specific operationalizations of variables that we used. Another possible explanation is that the effects of diversity on executive cognitions and group processes may not be uniform as we first proposed. One possible explanation is that there are other attributes or characteristics of demographic measures that differentiate them. For example, Pelled (1996) suggests that two characteristics (visibility and job-relatedness) may determine the

strength of a particular type of diversity with regard to its effect on conflict. It is entirely reasonable to believe that there are other attributes of demographic characteristics that may alter the nature of the relationship with either a cognitive construct such as strategic consensus or with group processes. The possibility that all diversity may not be equal, either in direction or strength of effect, suggests a promising area for future research.

This research has implications for the study of diversity within organizations and how it can be managed more effectively. One important finding is that some aspects of diversity may increase interpersonal conflict that, in turn, has a strongly negative impact on strategic consensus by reducing the use of agreement-seeking behaviors. For example, in our sample, functional diversity had a significant and positive effect on interpersonal conflict within the team. Therefore, one area for future research would be to examine interpersonal conflict more closely in order to understand what additional factors influence interpersonal conflict among TMT members.

As noted above, prior research has determined that there are also different kinds of conflict. Another promising area for future research might investigate whether other kinds of conflict also influence strategic consensus. In addition to different kinds of conflict there may also be different dimensions, all of which might affect other group processes or strategic consensus. For example, Jehn (1997) suggests that conflict has four dimensions and reports that these dimensions can influence other effects of conflict. Future research should examine some of these other dimensions to assess their impact on strategic consensus.

The finding that consensus was higher in the Irish teams suggests another interesting area for research. Perhaps this reflects the influence of strongly held cultural beliefs that tend to encourage members to reach consensus. This is particularly interesting in light of the fact that there were no significant differences between the U.S. and Irish teams on either of the group process measures (i.e., interpersonal conflict or agreement-seeking). Since cultural influences might be due to any number of factors (e.g., nationality, regional factors, religious beliefs) further research into the potential effects of culture on consensus would be valuable.

Future research might also examine whether direct interventions intended to encourage teamwork and cooperation within the TMT might mitigate any negative effects of diversity. For example, our results suggest that leadership practices that discourage interpersonal conflict and encourage agreement seeking could increase strategic consensus. Indeed, Katzenbach (1997) advocates the creation of certain team conditions to encourage agreement-seeking behavior, including establishing mutual accountability, and allowing team members to shape collectively the work products. Similarly, HR policies designed to promote team cohesion might enhance the effectiveness of diverse TMTs by drawing on the unique insights of individual team members while minimizing the potential for interpersonal conflict. Perhaps one of the most important implications of this study is that future research into questions of diversity and its effects on organizations must take a broad perspective if the complex interactions of these demographic variables with each other and group processes are to be understood and effectively managed.

Another interesting extension of this research could involve the influence of power differentials within the top management team on strategic consensus. It is entirely possible that the power distribution among TMT members might have a strong effect on strategic consensus, group processes within the team, or both. That is, would broad empowerment of the TMT enhance or diminish TMT consensus? Related to this would be whether the kind of leadership employed by the CEO affects either the processes within the team or the level of strategic consensus.

One potential limitation of this research is that we used a questionnaire-based method as an indirect surrogate measure of the mental models of strategy. We took several steps to ensure that our measure was well grounded with the true content of real mental models of strategy. Our conceptualization was based on 48 different items gleaned from an extensive review of the strategy literature and through pilot tests with executives. The main advantage of this is that a quantitative assessment of agreement within 76 separate top management teams can be accomplished. This quantitative approach would not be possible with many direct cognitive elicitation methods. Still, for future research we suggest that an interesting extension of this study would be to employ more direct methods that would entail nonquantitative

cognitive elicitation to provide a more direct probe of the actual strategic mental models of individual members of the top management team.

The influence of functional diversity is interesting, but indicates another potential limitation of this study. Functional diversity might be modeled in many different ways. For example, Hitt and Tyler (1991) and Walsh (1988) have suggested that senior executives often do not have a single, clearly identifiable functional track in their careers, and, in fact, differences in career tracks might make a difference in the way executives characterize firm strategy. While the results of this research tend to support the importance of functional *position*, we need to explore other possible measures of the construct, such as whether differences in prior career tracks contribute to this effect.

Our results indicate that organizations need to be aware of the potential problems created by increased diversity among top executives. However, we believe that it would be a mistake to assume that the potential difficulties identified here imply that firms should avoid diversity. Rather, CEOs and other executives need to be aware of the potential pitfalls and take active steps to counter any possible negative consequences. Diverse values and perspectives may bring challenges with regard to managing group processes or promoting shared mental models of firm strategy. Nevertheless, diversity is also likely to have positive effects such as increasing the environmental scanning capacity of the team or increasing the range of potential actions that the group considers when making strategic decisions. Also important, these results indicate that researchers and managers should be sensitive not only to the direct effects of diversity on group or organizational outcomes, but also to ways in which diversity may operate through intervening group processes. Excluding group processes from future research creates the possibility that relationships may be misinterpreted, which has critical implications for our understanding of TMTs.

In summary, this research provides important insights into the antecedents of TMT strategic consensus, and helps illuminate potential new research directions with regard to the link between TMT consensus and firm performance. As Priem (1990) suggests, increasing our understanding of the antecedents of consensus can help us better understand the link between consensus and performance, which has important implications for management. This study provides another link in the chain of understanding of TMT consensus and provides the basis for continued research and theory building with regard to the role of the top management team.

ACKNOWLEDGEMENTS

REFERENCES

Akaike, H. (1973). 'Information theory and an extension of the maximum likelihood principle'. In B. N. Petrov and F. Csake (eds.), *Second International Symposium on Information Theory*. Akadamiai Kiado, Budapest, pp. 267–281.

Amason, A. C. (1996). 'Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams', *Academy of Management Journal*, **39**, pp. 123–148.

Ancona, D. G. and D. F. Caldwell (1992). 'Demography and design: Predictions of new product team performance', *Organization Science*, **3**, pp. 321–341.

Axelrod, R. (1976). *The Structure of Decision: The Cognitive Maps of Political Elites*. Princeton University Press, Princeton, NJ.

Bantel, K. A. and S. E. Jackson (1989). 'Top management and innovations in banking: Does the composition of the top team make a difference?', *Strategic Management Journal*, Summer Special Issue, **10**, pp. 107–124.

Barr, P. S., J. L. Stimpert and A. S. Huff (1992). 'Cognitive change, strategic action, and organizational renewal', *Strategic Management Journal*, Summer Special Issue, **13**, pp. 15–36.

Blau, P. (1977). *Inequality and Heterogeneity: A Primitive Theory of Social Structure*. Free Press, New York.

Bourgeois, L. J. (1980). 'Performance and consensus', *Strategic Management Journal*, **1**(3), pp. 227–248.

Bourgeois, L. J. (1985). 'Strategic goals, perceived uncertainty, and economic performance in volatile environments', *Academy of Management Journal*, **28**(3), pp. 548–573.

Brief, A. P. and H. K. Downey (1983). 'Cognitive and organizational structures: A conceptual analysis of implicit organizing theories', *Human Relations*, **36**, pp. 1065–1090.

Chen, M., K. G. Smith and C. M. Grimm (1992). 'Action characteristics as predictors of competitive responses', *Management Science*, **38**, pp. 439–455.

Cosier, R. A. and P. L. Rechner (1985). 'Inquire method effects on performance in simulated business environment', *Organizational Behavior and Human Decision Processes*, **36**(1), pp. 79–95.

Cosier, R. A. and R. L. Rose (1977). 'Cognitive conflict and goal conflict effects on task performance', *Organizational Behavior and Human Performance*, **19**, pp. 378–391.

Cox, T. H. (1993). *Cultural Diversity in Organizations: Theory, Research and Practice*. Barrett-Koehler, San Francisco, CA.

Cyert, R. M. and J. G. March (1963). *A Behavioral Theory of the Firm*. Prentice-Hall, Englewood Cliffs, NJ.

Danserau, F., J. A. Alutto and F. J. Yammarino (1984). *Theory Testing in Organizational Behavior: The Variant Approach*. Prentice-Hall, Englewood Cliffs, NJ.

Day, D. V. and R. G. Lord (1992). 'Expertise and problem categorization: The role of expert processing in organizational sense-making', *Journal of Management Studies*, **29**, pp. 35–47.

Dess, G. G. (1983). 'Consensus in the strategy formulation process', *Academy of Management Proceedings*, pp. 22–26.

Dess, G. G. (1987). 'Consensus on strategy formulation and organizational performance: Competitors in a fragmented industry', *Strategic Management Journal*, **8**(3), pp. 259–277.

Dess, G. G. and N. K. Origer (1987). 'Environment, structure and consensus in strategy formation: A conceptual integration', *Academy of Management Review*, **12**(2), pp. 313–330.

Dutton, J. E. and J. K. Dukerich (1991). 'Keeping an eye on the mirror: The role of image and identity in organizational adaptation', *Academy of Management Journal*, **34**, pp. 517–554.

Eisenhardt, K. M. (1989). 'Making fast decisions in high-velocity environments', *Academy of Management Journal*, **32**(3), pp. 543–576.

Eisenhardt, K. M. and L. J. Bourgeois (1988). 'Politics of strategic decision making in high-velocity environments: Towards a midrange theory', *Academy of Management Journal*, **31**, pp. 737–770.

Eisenhardt, K. M., J. L. Kahwajy and L. J. Bourgeois III (1997). 'Conflict and strategic choice: How top management teams disagree', *California Management Review*, **39**(2), pp. 42–62.

Eisenhardt, K. M. and C. Schoonhoven (1990). 'Organizational growth: Linking founding team, strategy, environment and growth among U.S. semiconductor ventures, 1978–1988', *Administrative Science Quarterly*, **35**, pp. 504–529.

Finkelstein, S. and D. C. Hambrick (1990). 'Top-management team tenure and organizational outcomes: The moderating role of managerial discre-tion', *Administrative Science Quarterly*, **35**, pp. 484–503.

Finkelstein, S. and D. C. Hambrick (1996) *Strategic Leadership: Top Executives and their Effects on Organizations*. West, St. Paul, MN.

Fiske, S. T. and S. E. Taylor (1984). *Social Cognition*. Addison-Wesley, Reading, MA.

Flood, P. C., C. M. Fong, K. G. Smith, P. O. O'Regan, S. Moore and M. Morley (1997). 'Top management teams and pioneering: A resource based view', *International Journal of Human Resource Management*, **8**, pp. 291–306.

Floyd, S. W. and B. Wooldridge (1992). 'Managing strategic consensus: The foundation of effective implementation', *Academy of Management Executive*, **6**(4), pp. 27–39.

Ford, J. D. and D. A. Baucus (1987). 'Organizational adaptation to performance downturns: An interpretation-based perspective', *Academy of Management Review*, **12**, pp. 366–380.

Fredrickson, J. W. (1984). 'The comprehensiveness of strategic decision processes: Extensions, observations, future directions', *Academy of Management Journal*, **27**, pp. 445–466.

Fredrickson, J. W. and A. L. Iaquinto (1989). 'Inertia and creeping rationality in strategic decision processes', *Academy of Management Journal*, **12**(3), pp. 516–542.

Fredrickson, J. W. and T. R. Mitchell (1984). 'Strategic decision processes: Comprehensiveness and performance in an industry with an unstable environment', *Academy of Management Journal*, **27**, pp. 399–423.

Gero, A. (1985). 'Conflict avoidance in consensual decision processes', *Small Group Behavior*, **16**(4), pp. 487–499.

Gist, M. E., E. A. Locke and S. A. Taylor (1987). 'Organizational behavior: group structure, process and effectiveness', *Journal of Management*, **13**(2), pp. 237–257.

Grimm, C. M. and K. G. Smith (1991). 'Management and organizational change: A note on the railroad industry', *Strategic Management Journal*, **12**(7), pp. 557–562.

Hambrick, D. C., T. S. Cho and M. Chen (1996). 'The influence of top management team heterogeneity on firms' competitive moves', *Administrative Science Quarterly*, **41**, pp. 659–684.

Hambrick, D. and R. D'Aveni (1992). 'Top team deterioration as part of the downward spiral of large corporate bankruptcies', *Management Science*, **38**, pp. 1445–1466.

Hambrick, D. C. and P. A. Mason (1984). 'Upper echelons: The organization as a reflection of its top managers', *Academy of Management Review*, **9**(2), pp. 193–206.

Hayduk, L. A. (1987). *Structural Equation Modeling with LISREL*. Johns Hopkins University Press, Baltimore, MD.

Hitt, M. A. and B. B. Tyler (1991). 'Strategic decision models: Integrating different perspectives', *Strategic Management Journal*, **12**(5), pp. 327–351.

Ireland, R. D., M. A. Hitt, R. A. Bettis and D. A. dePorras (1987). 'Strategy formulation processes:

Differences in perceptions of strength and weaknesses indicators and environmental uncertainty by management level', *Strategic Management Journal*, **8**(5), pp. 469–486.

Jackson, S., K. E. May and K. Whitney (1995). 'Understanding the dynamics of diversity in decisions making teams'. In R. A. Guzzo and E. Salas (eds.), *Team Effectiveness and Decision Making in Organizations*. Jossey-Bass, San Francisco, CA, pp. 204–261.

James, L. R., R. G. Demaree and G. Wolf (1984). 'Estimating within-group interrater reliability with and without response bias' *Journal of Applied Psychology*, **69**, pp. 85–98.

Jehn, K. A. (1992). 'The impact of intragroup conflict on effectiveness: A multimethod examination of the benefits and detriments of conflict', unpublished doctoral dissertation, Northwestern University.

Jehn, K. A. (1995). 'A multimethod examination of the benefits and detriments of intragroup conflict', *Administrative Science Quarterly*, **40**, pp. 256–282.

Jehn, K. A. (1997). 'A qualitative analysis of conflict types and dimensions in organizational groups', *Administrative Science Quarterly*, **42**, pp. 530–557.

Joreskog, K. G. and D. Sorbom (1993). *LISREL 8 User's Reference Guide*. Scientific Software, Chicago, IL.

Katz, R. (1982). 'The effects of group longevity on project communication and performance', *Administrative Science Quarterly*, **27**, pp. 81–104.

Katzenbach, J. (1997). 'The myth of the top management team', *Harvard Business Review*, **75**(6), pp. 82–91.

Keck, S. L. (1991). 'Top management team structure: Does it matter anyway?', paper presented at the Academy of Management meeting, Miami, FL.

Kiesler, S. and L. Sproull (1982). 'Managerial response to changing environments: Perspectives on problem sensing from social cognition', *Administrative Science Quarterly*, **27**, pp. 548–570.

Klimoski, R. and S. Mohammed (1994). 'Team mental model: Construct or metaphor', *Journal of Management*, **20**, pp. 403–437.

Koslowski, S. W. and K. Hattrup (1992). 'A disagreement about within-group agreement: Disentangling issues of consistency versus consensus', *Journal of Applied Psychology*, **77**(2), pp. 161–167.

Langfield-Smith, K. (1992). 'Exploring the need for a shared cognitive map', *Journal of Management Studies*, **29**, pp. 349–368.

Lott, A. J. and B. E. Lott (1961). 'Group cohesiveness, communication level, and conformity', *Journal of Abnormal and Social Psychology*, **62**, pp. 408–412.

Lyles, M. A. (1981). 'Formulating strategic problems: Empirical analysis and model development', *Strategic Management Journal*, **2**(1), pp. 61–75.

MacMillan, I., M. L. McCaffery and G. Van Wijk (1985). 'Competitors' responses to easily imitated new products: Exploring commercial banking product introductions', *Strategic Management Journal*, **6**(1), pp. 75–86.

Michel, A. I. and D. C. Hambrick (1992). 'Diversification posture and the characteristics of the top management team', *Academy of Management Journal*, **35**, pp. 9–37.

Miles, R. E. and C. C. Snow (1978). *Organizational Strategy, Structure and Process*. McGraw-Hill, New York.

Minkes, A. L. (1994). 'Process, conflict and commitment in organizational decision making', *Journal of General Management*, **20**(2), pp. 78–89.

Mintzberg, H. (1973). *The Nature of Managerial Work*. Harper & Row, New York.

Nielson, R. P. (1981). 'Towards a method of building consensus during strategic planning', *Sloan Management Review*, **22**(4), pp. 28–40.

Norburn, D. and S. Birley (1988). 'The top management team and corporate performance', *Strategic Management Journal*, **9**(3), pp. 225–237.

O'Reilly, C. A., D. F. Caldwell and W. P. Barnett (1989). 'Work group demography, social integration, and turnover', *Administrative Science Quarterly*, **34**, pp. 21–37.

O'Reilly, C. A., III and S. Flatt (1989). 'Executive team demography, organizational innovation and firm performance', working paper, University of California, Berkeley.

Pelled, L. H. (1996). 'Demographic diversity, conflict, and work group outcomes: An intervening process theory', *Organization Science*, **7**, pp. 615–631.

Pfeffer, J. (1981). *Power in Organizations*. Pitman, Marshfield, MA.

Pfeffer, J. (1983). 'Organizational demography'. In B. Staw and L. Cummings (eds.), *Research in Organizational Behavior*, Vol. 5. JAI Press, Greenwich, CT, pp. 299–357.

Pondy, L. R. (1969). 'Varieties of organizational conflict', *Administrative Science Quarterly*, **14**, pp. 499–506.

Porter, M. E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. Free Press, New York.

Prahalad, C. K. and R. A. Bettis (1986). 'The dominant logic: A new linkage between diversity and performance', *Strategic Management Journal*, **7**(6), pp. 485–501.

Priem, R. L. (1990). 'Top management team group factors, consensus, and firm performance', *Strategic Management Journal*, **11**(6), pp. 469–478.

Priem, R. L., D. A. Harrison and N. K. Muir (1995). 'Structured conflict and consensus outcomes in group decision making', *Journal of Management*, **21**(4), pp. 691–710.

Priem, R. L. and K. H. Price (1991). 'Process and outcome expectations for the dialectical inquiry, devil's advocacy, and consensus techniques of strategic decision making', *Group and Organization Studies*, **16**(2), pp. 206–225.

Schweiger, D. M., W. R. Sandberg and J. W. Ragan (1986). 'Group approaches for improving strategic decision making: A comparative analysis of dialectical inquiry, devil's advocacy, and consensus', *Academy of Management Journal*, **29**(1), pp. 51–71.

Schweiger, D. M., W. R. Sandberg and P. Rechner (1989). 'Experiential effects of dialectical inquiry, devil's advocacy and consensus approaches to stra-

tegic decision making', *Academy of Management Journal*, **32**, pp. 745–772.

Shaw, M. E. (1981). *Group Dynamics: The Psychology of Small Group Behavior* (3rd ed.). McGraw-Hill, New York.

Sims, H. P. and D. A. Gioia (1986). *The Thinking Organization*. Jossey-Bass, San Francisco, CA.

Smith, K. A., K. G, Smith, H. P. Sims, Jr., J. D. Olian and J. Scully (1993). 'Top management team characteristics and technological innovation in high-tech companies: Exploring the mediating role of group process', paper presented at the annual meeting of the Academy of Management, Atlanta, GA.

Smith, K. G., K. A. Smith, D. P. O'Bannon, J. D. Olian, H. P. Sims and J. Scully (1994). 'Top management team demography and process: The role of social integration and communication', *Administrative Science Quarterly*, **39**, pp. 412–438.

Stogdill, R. M. (1959). *Individual Behavior and Group Achievement*. Oxford University Press, New York.

Tabachnick, B. G. and L. S. Fidell (1996). *Using Multivariate Statistics*. HarperCollins, New York.

Thomas, J. B., S. M. Clark and D. A. Gioia (1993). 'Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action and outcomes', *Academy of Management Journal*, **36**, pp. 239–270.

Tushman, M. L., B. Virany and E. Romanelli (1989). 'Effects of CEO and executive team succession on subsequent organization performance', paper presented at the Academy of Management meeting.

Wagner, G. W., J. Pfeffer and C. A. O'Reilly (1984). 'Organizational demography and turnover in top management groups', *Administrative Science Quarterly*, **29**, pp. 74–92.

Walsh, J. P. (1988). 'Selectivity and selective perception: An investigation of managers' belief structures and information processing', *Administrative Science Quarterly*, **31**, pp. 873–896.

Walsh, J. P. (1995). 'Managerial and organizational cognition: Notes from a trip down memory lane', *Organization Science*, **6**(3), pp. 280–321.

West, C. T. and C. R. Schwenk (1996). 'Top management team strategic consensus, demographic homogeneity and firm performance: A report of resounding nonfindings', *Strategic Management Journal*, **17**(7), pp. 571–576.

Wiersema, M. and K. A. Bantel (1992). 'Top management team demography and corporate strategic change', *Academy of Management Journal*, **35**, pp. 91–121.

Whyte, G. (1989). 'Groupthink reconsidered', *Academy of Management Review*, **14**(1), pp. 40–56.

Zenger, T. R. and B. S. Lawrence (1989). 'Organizational demography: The differential effects of age and tenure distributions on technical communication', *Academy of Management Journal*, **32**, pp. 353–376.

APPENDIX 1: VARIABLE CONSTRUCTIONS

Agreement seeking (alpha = 0.79)

1. TMG decisions are not final until all the members agree that the decision is acceptable to them.
2. Everyone's input is incorporated into most important company decisions.
3. The TMG believes that taking more time to reach consensus on a strategic decision is generally worth it.
4. When final decisions are reached, it is common for at least one member of the TMG to be unhappy with the decision (reverse coded).
5. All the members of the TMG are committed to achieving the company's goals.
6. When making decisions, the TMG works hard to reach a decision.

Interpersonal conflict (alpha = 0.84)

1. The members of the TMG get along well together very well (reverse coded).
2. Relationships between members of the TMG are best described as 'win–lose'; if he/she wins, I lose.
3. The members of the TMG are always ready to cooperate and help each other (reverse coded).
4. The members of the TMG really stick together (reverse coded).
5. Relationships between members of the TMG are positive and rewarding (reverse coded).

APPENDIX 2: STRATEGIC CONSENSUS

1. Our company believes that unstable, rapidly changing environments provide more opportunities than threats.
2. Our company specifically identifies the causes of problems before making important strategic decisions.
3. Our number one priority is lowest cost relative to our competition.
4. Our company is more reactive than proactive.
5. The speed with which we develop products relative to our competition is an important priority for this company.
6. Most of our products and services compete in lower-priced markets.
7. Our company places strong emphasis on R&D, technological leadership, and innovation.

8. Our company places a great deal of emphasis on long-term (over 5 years) goals and strategies.

9. Our company makes investments with lower returns but higher probabilities of success.

10. Our company develops an exhaustive set of alternatives before making important management decisions.

11. There is a bird-in-the-hand emphasis on the short term in making management decisions.

12. We work hard in each area of the organization at maintaining the lowest cost possible.

13. Our company's products are sold to very broadly defined, unspecialized markets.

14. Our competitors consider us to be fast in responding to their actions (e.g., price cuts or new product introductions).

15. We strictly enforce our Quality Control specifications.

16. Our company more often introduces completely new products and services rather than simply modifying existing lines.

17. Our company seeks advice from outside experts to help us make important strategic decisions.

18. Our company makes its profits by delivering above-average quality goods and services and then charging more for them.

19. We formally monitor our product quality: where it is good and where it needs improvement.

20. Our company frequently assesses the long-term implications of change in technology relevant to the products and services we offer.

21. Our company frontloads production by building capacity ahead of sales.

22. From start to finish we develop products faster than our competitors.

23. Our company seeks advice from all the firm's functional areas when making important strategic decisions.

24. Taking advantage of economies of scale is an important goal of this company.

25. The quality of our products and services far exceeds that of our competitors.

26. Our company focuses its products and services to meet the specialized needs of select clients; we don't try to be all things to all people.

27. Our company is extremely thorough in its evaluation of strategic alternatives.

28. Product quality is not the most important priority of this firm.

29. When we see a business opportunity, we can seize that opportunity quicker than our competitors can.

30. Our company anticipates how our competitors might respond to our strategic actions.

31. Our company emphasizes marketing tried and true products and services.

32. Our company invests in high-risk projects with chances of very high returns.

33. Our company introduces more new products and services each year than our closest competitors.

34. Our company frequently assesses long-term forecasts of sales, profits, and the nature of markets.

35. Our brand name is an extremely valuable marketing asset.

36. Most of our products and services compete in higher-priced markets.

37. Our company lets someone else break new ground and only moves into a market once it has been proven profitable.

38. Our company makes dramatic rather than minor changes in our product lines.

39. Our company will spend whatever it takes to arrive at a good decision.

40. Overall, our customers rate the quality of our products and services as excellent.

41. Our sales force is faster than our competitors' in responding to the needs of customers.

42. Using our experience to cut costs is an important goal of this company.

43. Employees are rewarded for high-quality work.

44. Our company makes its profit by selling large quantities of goods and services at the lowest possible price.

45. Our company's products are sold to narrowly defined, specialized markets.

46. Our company emphasizes after-sales support, such as telephone hot lines, field technicians and strong warranties.

47. Our company works hard at building a strong product or brand image.

48. Our number one priority is innovation, relative to our competitors.