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**Cognitive consensuality and organizational performance: A
systematic assessment**

Yeung, Kwok On, Ph.D.

The University of Michigan, 1990

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COGNITIVE CONSENSUALITY AND ORGANIZATIONAL
PERFORMANCE: A SYSTEMATIC ASSESSMENT

by

Kwok On Yeung

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Business Administration)
in The University of Michigan
1990

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DEDICATION

To the three females that
had, have, and will have
most significant impacts on my life:

My deceased mother
My wife, Jenny
My daughter, Priscilla

ACKNOWLEDGEMENTS

Writing this acknowledgement section is the most joyful part of the whole dissertation for two reasons. First, by this time, I realize I am close to the completion of my formal study. While this section appears at the beginning of my dissertation, it marks the end of my doctoral program. Second, it brings back to me many memories of the last four years. While I reviewed my days at the University of Michigan, I am so grateful to a large number of individuals who have generously spent/shared time, attention, care, concerns, ideas, and insights with me. I must confess I learned a lot at Michigan, in terms of both scholarship and scholarly characters.

First, I would like to express my heartfelt gratitude to the members of my dissertation committee, who constituted not only a big committee, but also a great committee. From each of the committee members, I inherit very different intellectual influences and skills. In chronological order of my encounter with them, I would like to recognize the guidance and assistance I received from each.

Of my committee members, the first name I came across was that of my chairman, Noel Tichy. It was in 1985 when I examined the management system in the People's Republic of China (PRC). At that time, I was amazed by the interpersonal network that worked behind the complex structural arrangement in the PRC. One of my thesis committee members then suggested to me Noel's book on Managing Strategic Change. Then I asked that committee member: "Was Noel Tichy also a Japanese (like Bill

Ouchi)?" It is a story I seldom tell to anyone because I am afraid I may fail. Anyway, I am very fortunate to have Noel as my chairman. In the past few years, Noel has been a great help to me, especially in more strategic maneuvers. He often challenged me to test the boundary (instead of staying within the boundary), pushed me to think in terms of real world phenomena, and finally helped me to work in a research position in the Organizational Studies Laboratory of Michigan Business School. I am indebted to him for the intellectual challenges he posed and the opportunities he generated.

Were it not for Wayne's efforts in arranging for me to come to Michigan, I would have studied at either MIT, Northwestern or Hong Kong. At Michigan, Wayne has always been a source of support and encouragement. He spent a lot of time coaching me to be a scholar and introduced me to many exciting research opportunities. Wayne later introduced me to Dave, who is another major mentor, teacher, and colleague at Michigan. While I am impressed by Wayne's insightful and complex ideas, I am fascinated by Dave's quick and penetrating thinking. Wayne, Dave and I worked closely in the last few years. We conducted joint research and produced joint presentations and publications. I am also indebted to them for the construct of cognitive consensuality examined in this dissertation, which grew out of their ongoing thinking on cultural and strategic unity. Without their guidance and collaboration, I am sure my doctoral program would not have been so exciting and fruitful.

My interests in organizational cognition were intensified when Karl came to Michigan. Karl, as a leading researcher in this area, has extremely complex and innovative ideas. I am always impressed by his divergent and pathbreaking perspectives in analyzing organizations. His ideas and research are among my key intellectual foundations and his influence can be seen throughout this dissertation. I am extremely pleased to have him on my committee.

Frank Andrews is widely known among students and colleagues as the "walking encyclopedia" on statistics. Despite of his commitment to a large number of doctoral students, he has been very accessible, helpful and easygoing. I still remember those productive lunch meetings in his office when he drew my attention to some sophisticated analyses. From him, I learned not only statistical techniques, but more importantly, some unique scholar characters.

When I started my dissertation, Jane was still new to Michigan. However, she quickly played a very important role in the process of my dissertation research. Her critical thinking on conceptual and methodological issues are greatly admired. I am indebted to her for her time and attention in providing a thorough critique on my drafts. Thanks, Jane!

Stuart Hart was the last committee member I contacted. To my surprise, Stu was much more knowledgeable in my dissertation area than I expected. He has introduced me to some major articles in strategy

management and his inputs and support throughout the research process are greatly appreciated.

In addition to my committee members, many individuals at Michigan and elsewhere have contributed in different ways to my doctoral study and dissertation. Kim Cameron served on the committees of both my preliminary examination (organization theory) and pre-dissertation research. His guidance and support deserve special acknowledgement. Dick Daft also served on the committee of my preliminary examination (organizational behavior) when he visited Michigan. Greg Dess at University of Texas-Arlington, a major researcher in the area of strategic consensus, provided comments and suggestions on my dissertation proposal. Bill Glick at University of Texas-Austin also discussed numerous conceptual and methodological issues on my dissertation research. Laura Klem at the Institute of Social Research was very helpful and instrumental to my statistical analyses. Finally, my peers, Mary Tschirhart, Sarah Freeman, and Doug Orton, read my draft and provided useful inputs to my dissertation.

Finally, my family members both in Hong Kong and the United States have provided me tremendous amount of encouragement and support. My family members in Hong Kong have gracefully released me from numerous family responsibilities there. My wife, Jenny, has always been a propelling force in pushing me through the program. At one point in my dissertation research, I was so frustrated and depressed with my data that I just wandered around and could not sit down and write. But my

memory is still fresh of the night she kicked me out of bed at 1:00 am and blamed me for not working hard. Thanks, Jenny! I finally started writing Chapter 1 that night and dared not return to bed before 4:00 am. Jenny also provided me with much editorial support. Last but not the least, I should also acknowledge my daughter, Priscilla, for sleeping overnight as early as when she was five weeks old. She has been so cooperative that I had more time to finish the final draft of my dissertation.

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CHAPTER 1

INTRODUCTION

In recent decades, researchers and practitioners have been fascinated by the contribution of shared cognition¹ to organizational performance (Bennis & Nanus, 1985; Bourgeois, 1980; Deal & Kennedy, 1982; Dess & Origer, 1987; Hall, 1984; Ouchi, 1981; Pascale & Athos, 1981; Peters & Waterman, 1982; Wilkins & Ouchi, 1983). Scholarly investigations of shared values, shared beliefs, strategic unity, consensus, shared meanings and interpretation have appeared time after time in a wide range of literatures, including strategic management (Bourgeois, 1980; Brockbank & Ulrich, 1990; Dess, 1987; Dutton, Fahey & Narayanan, 1983; Hart, 1989; Mintzberg & Waters, 1985; Prahalad & Bettis, 1986), organizational culture (Louis, 1985; Peters & Waterman, 1982; Schein, 1985; Weick, 1985a), and business vision (Bennis & Nanus, 1985; Levinson & Rosenthal, 1984; Tichy & Devanna, 1986; Westley & Mintzberg, 1989).

In the practitioner arena, an emphasis on the formulation of business visions, corporate philosophies, and business values is also prevalent among organizations throughout the United States. AT&T, IBM, General Motors, General Electric, Citicorp, Hewlett-Packard, and others are outstanding examples that have invested time and energy toward this end. Bennis and Nanus's (1985) study of ninety successful leaders in the public and private sectors highlighted the importance of shared cognition:

¹ "Shared cognition" is used as an umbrella term in this dissertation. It refers generally to cognitions (beliefs, assumptions, values, perceptions, etc.) that are shared among organizational members.

A number of lessons can be drawn from the experience of our ninety leaders. First, and perhaps most important, is that all organizations depend on the existence of shared meanings and interpretations of reality, which facilitate coordinated action (p.39)

Shared cognition is highly valued for two reasons. First, environmental unpredictability and turbulence (Portwood & Eichinger, 1986; Thurow, 1981; Ulrich & Wiersema, 1989) have placed tremendous strain on traditional structures and strategies in meeting the competing demands of responsiveness, flexibility, coherence, coordination, and control. Shared cognition provides a better means of meeting these competing demands (Peters & Waterman, 1982, Quinn, 1988). Simultaneous loose-tight properties, for instance, can be developed within organizations through shared values (Peters & Waterman, 1982), empowerment (Bennis & Nanus, 1985), and shared paradigms (Ouchi, 1981; Wilkins & Ouchi, 1983). The ideal outcome is the realization of organizational control through the enhancement of individual autonomy.

Second, trust and commitment of organizational members toward their organizations and leaders have been eroding (Fortune, 1989) and members are not working at their full capacities (Bennis & Nanus, 1985). The creation of shared values, visions, and interpretations may help to improve communication and understanding, create meaning beyond immediate work, and, eventually, increase the trust and commitment of organizational members toward the organization and its management (Bennis & Nanus, 1985; Brockbank, Ulrich & Yeung, 1989; Denison & Mishra, 1989; Tichy & Devanna, 1986). The ideal outcome is organizational members who can work both harder and happier.

Problem Statement

Shared cognition is clearly one of the major themes in current research. Hundreds or even thousands of articles and books have been written on topics related to shared cognition. While the construct "shared cognition" implies a combination of structural (the extent of sharedness) and substantive (the content of sharedness) components, current research often either assumes the unitary nature of the construct or emphasizes the substantive component at the expense of the structural component. The content of shared cognitions- beliefs, values, assumptions, understandings, meanings, visions, interpretations, strategies, etc. (Bennis & Nanus, 1985; Kilmann, Saxton & Serpa, 1985; Pascale & Athos, 1981; Peters & Waterman, 1982)- has frequently drawn more attention than the extent to which these cognitions are shared (Bougon et al., 1977; Bourgeois, 1980; Dess, 1987). However, without explicit examination and specification of the relationship between "the extent of sharedness" and organizational performance, readers are often led to assume either that the extent of sharedness is not important, or that the more the sharing the better the performance.

This dissertation attempts to advance current study of shared cognition in two ways: 1) by conceptually differentiating the structural and the substantive components of shared cognition; and 2) by examining the conceptual and empirical relationships between the structural component of shared cognition and organizational performance.

Cognitive consensuality is the construct used to represent the extent of sharedness of cognitions. Built upon schema theory (Lord & Foti, 1986; Taylor & Crocker, 1981), the construct is defined in this dissertation as the extent to which individual schemas of organization members, used in

defining and interpreting organizational realities, are shared as a result of organizational processes and experiences.

Because organizational realities are multifaceted, cognitive consensuality in one organizational domain may be different from consensuality in the others. Cognitive consensuality, like schema theory, is domain-specific.

Because cognitive consensuality examines a structural characteristic of a group or organizational phenomenon, it is a group or organizational construct. Cognitive consensuality may range from very low to very high.

Cognitive consensuality as a construct is worth investigating. Grounded in the social cognitive perspective, the construct is tied to a rich body of research in cognitive psychology. Studies of groupthink (Janis, 1982), minority influence in group decision making (Nemeth, 1986), accuracy of environmental sensing (Ashby, 1952; Kiesler & Sproull, 1982; Weick, 1983), and organizational adaptability (Weick, 1977a, 1979a) have all implied directly or indirectly the problematic nature of extremely high cognitive consensuality. When cognitive consensuality among members is high, groups or organizations have a greater tendency to make low quality decisions, hold more simplistic views about their environments, and become less flexible in the face of change. As a result, organizational performance suffers.

The performance implications of these arguments, however, strongly contradict those of other studies. Research on organizational control (Ouchi, 1980; Wilkins & Ouchi, 1983), coordination (Gioia & Sims, 1986; Weick, 1979a), enactment (Hrebiniak & Snow, 1982; Weick, 1977b), cohesiveness and commitment (Shrivastava & Schneider, 1984), and resource concentration (Dess & Origer, 1987; Porter, 1980) have all implied the

importance of cognitive consensuality in enhancing organizational performance. When the cognitive consensuality of organization members is high, groups or organizations are likely to have more efficient control, tighter coordination, more confidence in organizational enactment, higher organizational cohesiveness and commitment, and more targeted resource allocation and usage. Hence, organizational performance increases.

The contradictory logic of the consensuality-performance relationship is also reflected in conflicting empirical findings (Bourgeois, 1980; Dess, 1987; Murray, 1989). Given the increasing prominence of the idea of shared cognition in both the academic and business worlds, and given the conflicting theoretical and empirical implications of consensuality-performance relationships, systematic studies grounded in rich theoretical perspectives are clearly needed to integrate and advance current knowledge in this area.

This dissertation represents an initial response to this need. It aims to contribute to current knowledge of the consensuality-performance relationship in three ways. First, grounded in a social cognitive perspective, the dissertation provides a solid grounding to reformulate, reinterpret and resolve some controversies in current studies. The conflicting theoretical and empirical implications of consensuality-performance relationships, can to some extent, be conceptualized as an outgrowth of the dualistic nature of schema, i.e., its benefits vs. liabilities (Gioia & Sims, 1986; Kiesler & Sproull, 1982; Taylor & Crocker, 1981). When cognitive consensuality is conceptualized in this way, contradictory implications of the relationship between consensuality and performance may be viewed with new insights. While these contradictions may be resolved and minimized with further specification of contingency variables, a certain level of contradiction may be

expected. What become more important to academicians and practitioners, then, are questions of organizational tradeoffs (Weick, 1983) and choices regarding the appropriate level of consensuality².

Second, this dissertation attempts to provide a systematic assessment of the consensuality-performance relationship by empirically examining most of the related issues. Issues to be addressed include 1) the form of the functional relationship (linearity vs curvilinearity) (Priem, 1990), 2) the choice of performance outcomes (Murray, 1989), 3) the moderating effects of environment (Dess & Origer, 1987), 4) the domains of consensuality (strategy, culture, and business vision), and 5) the scope of consensuality (top management team vs. organization) (Wooldridge & Floyd, 1989). While these issues have been raised and examined individually, no existing study has systematically examined all of them simultaneously. A systematic assessment of all these issues is important, as it examines individual issues in the context of other issues. The relative importance of individual issues and the interaction among these issues can then be understood.

Third, this dissertation examines these research issues with an extensive national database³. Most empirical studies (Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987) have based their investigation on small samples (usually fewer than 50 businesses or firms) in specific industries. As a result, these studies are restricted in their choices of statistical analyses, inclusion of relevant control variables, splits of sample

² This dissertation assumes that cognitive consensuality is manageable, given that it is partly an outcome of organizational choice and design.

³ The data used in this dissertation are part of a larger study called "Human Resource Competencies for the 1990's." Data were collected from more than 10,000 respondents from 1,200 businesses in 91 major U.S. firms (mostly Fortune 200).

for finer analysis, and generalizability of research findings. With data collected from 1200 businesses, this study overcomes these limitations. Thus, more solid empirical implications can be derived.

Research Issues

Using the contradictory theoretical and empirical implications of consensuality-performance relationships as a point of departure, five research issues are examined in this dissertation.. These issues highlight the key points of contention in current studies of consensuality-performance relationships. They are derived partly from the social cognitive perspective (plausibility of curvilinearity, organizational tradeoffs in outcomes, and domains of consensuality) and partly discussed in and suggested by literatures related to the consensuality-performance relationship (moderating effects of environment and scope of consensuality). Through the investigation of these issues, this dissertation helps to integrate, resolve, and extend research beyond the contradictory implications of consensuality-performance relationships.

1) Plausibility of a curvilinearity relationship

One possible resolution of the contradictions in the theoretical and empirical relationships between consensuality and performance is that the relationship may be curvilinear instead of linear. The consensuality-performance relationship can be both positive and negative, depending on the level of existing consensuality.

The rationale for this assertion can be developed from the dualistic nature of schematic information processing (Gioia & Sims, 1986; Kiesler &

Sproull, 1982; Taylor & Crocker, 1981). Substantial research has demonstrated that schematic information processing has both benefits and liabilities. While the use of schemas facilitates information processing and provides bases for interpretation, evaluation, and action, it also distorts information and causes resistance to the revision of currently held schemas. Similarly, in the study of cognitive consensuality, the relative costs and benefits of consensuality to organizational performance may vary at different levels of consensuality. When consensuality is low, its costs and benefits in relation to specific performance outcomes are low. In this case, when the cognitive consensuality of organizational members is developed further, its benefits may increase while costs are still reasonably low. However, when consensuality is high, both costs and benefits are high. By increasing the cognitive consensuality of organization members, the increase in costs may outweigh its associated benefits. The logic is comparable to the concept of marginal utility in economics. Following this argument, the optimal level of consensuality in relation to organizational performance may be somewhere in the middle. A curvilinear consensuality-performance relationship may thus be theoretically plausible.

The first research issue to be examined in this dissertation is whether the consensuality-performance relationship varies at different levels of consensuality. Both the linear and curvilinear properties of the consensuality-performance relationship are examined.

2) Organizational tradeoffs in outcomes

Given the dualistic nature of schematic information processing, another possible extension of the consensuality-performance relationship is that its functional form varies with different types of performance outcomes.

Because organizational performance has been found to be multidimensional (Steers, 1975; Cameron & Whetten, 1983), the essential elements of doing well in one performance outcome may be different from those in another. Hence, the performance implications of high or low cognitive consensuality (given its relative costs and benefits) may differ from one performance outcome to another. The research issue is whether the consensuality-performance relationship varies with different performance outcomes.

This dissertation examines organizational competitiveness and innovativeness as two performance outcomes. These outcomes represent different time horizons and competitive dimensions of organizational performance (Lawrence & Lorsch, 1967). They have been investigated frequently in the context of consensuality, and contradictory findings have been reported (Bantel & Jackson, 1989; Bourgeois, 1980; Dess, 1987; O'Reilly & Flatt, 1986).

3) Moderating effects of environment

The moderating effects of environment have been argued by some researchers to have significant impacts on the consensuality-performance relationship (Dess & Origer, 1987; Priem, 1990). Current research regards environmental dynamism or stability as the most important dimension that may moderate the relationship (Bourgeois, 1985; Dess, 1987; Hambrick & Mason, 1984; Priem, 1990). The argument is again related to the dualistic nature of schematic information processing. In a stable environment, high cognitive consensuality should be positively related to organizational performance, as it enhances the coordination and cognitive efficiency of organization members (Gioia & Sims, 1986; Kiesler & Sproull, 1982). In a changing environment, high cognitive consensuality may hinder

organizational performance, as it lowers organizational adaptability to change (Murray, 1989; Weick, 1977a). This suggest that the consensuality-performance relationship is different in stable and changing environments (Hambrick & Mason, 1984; Priem, 1990).

The research question for this dissertation is whether the consensuality-performance relationship differs in stable and changing environments.

4) Domains of consensuality

Most of the current findings on the consensuality-performance relationship derive from studies in the strategy-related domain. As a schema is domain specific⁴ (Lord & Foti, 1986), empirical investigations of cognitive consensuality should also be domain specific. The question is whether research findings in the strategy-related domain are applicable to other organizational domains. More specifically, a research issue here is whether the consensuality-performance relationship differs in different organizational domains.

In this dissertation, cognitive consensualities of organization members on competitive strategy, business culture, and business vision are examined simultaneously. These domains were chosen for two reasons. First, competitive strategy, business culture, and business vision are frequently studied and argued to have relationships with organizational performance (Bennis & Nanus, 1985; Bourgeois, 1980; Dess, 1987; Peters & Waterman, 1982; Tichy & Devanna, 1986). Second, sharedness of members' cognitions is often assumed in research of these three organizational domains (Bennis

⁴ Domain refers to a referent point (e.g., object, situation, person) around which an individual organizes knowledge and information.

& Nanus, 1985; Hrebiniak & Joyce, 1984; Schein, 1985). These three domains are also related to the three basic questions of know-how (how to compete: competitive strategy), know-what (what we are: business culture), and know-why (why to conduct business in this way: business vision) (Bennis & Nanus, 1985).

5) Scope of consensuality

Scope of consensuality, as argued by Wooldridge and Floyd (1989), is another issue that is seldom addressed explicitly by current research on the consensuality-performance relationship. While most research in strategic management suggests that consensuality among members of top management teams is crucial (TMT model) to organizational performance (Bourgeois, 1980; Dess, 1987; Hambrick & Mason, 1984; Hambrick, 1987; Hrebiniak & Snow, 1982; Priem, 1990), researchers of organizational culture and business vision usually propose that consensuality among organization members across different levels, in addition to top management, is equally important (organizational model). This is because top management alone cannot implement most organizational decisions (Bennis & Nanus, 1985; Deal & Kennedy, 1982; Tichy & Devanna, 1986). Hence, the research question is whether consensuality among top management team or all organization members is more important in predicting organizational performance. This dissertation examines both the TMT and organizational models.

Organization of the dissertation

This dissertation is organized into six chapters. In Chapter 2, the construct of cognitive consensuality is further clarified and elaborated. Its theoretical underpinning in a social cognitive perspective is specified and its relationships to other constructs, such as consensus, culture, paradigm, ideology, concurrence-seeking, conformity, and group composition, are compared. Chapter 3 reviews literatures related to the five research questions that guide the investigation of this dissertation. An integrative model is developed. Chapter 4 introduces the methodology of the dissertation. Sample, measures and statistical methods are discussed. Chapter 5 presents the research findings. Chapter 6 discusses the major research findings and implications of the dissertation, and suggests directions for future research. Limitations of the study are also discussed.

CHAPTER 2

COGNITIVE CONSENSUALITY

This chapter elaborates and clarifies the construct of cognitive consensuality. The theoretical underpinning of the construct is explained from the social cognitive perspective while the substantive meaning of the construct is clarified through comparison with other, related constructs.

Schematic Bases of Cognitive Consensuality

The construct of cognitive consensuality is built from two major premises in cognitive psychology: 1) individuals simplify reality through the construction of schemas in their information processing (Fiske & Taylor, 1984; Markus & Zajonc, 1985; Simon, 1976; Taylor & Crocker, 1981); and 2) individual schemas can be shared through information exchange, social interaction, and other interpersonal and organizational processes (Goodenough, 1981; Salancik & Pfeffer, 1978; Weick, 1979a).

Individual Schemas

Schemas are abstract cognitive representations of organized prior knowledge, extracted from experiences with specific instances (Fiske & Linville, 1980). They represent abridged, generalized, and corrigible organizations of experience that serve as initial frames of reference for action and perception (Weick, 1979b).

Hence, schemas have the following attributes. First, they are cognitive simplifications of reality (Simon, 1976). They contain knowledge

that is domain specific (Lord & Foti, 1986), e.g., self, person, event, situation, and person-in-situation. They are built from experience with relevant instances, and become more abstract, more complex, and more organized with increased experience (Fiske & Taylor, 1984). They are dynamic and corrigible (Axelrod, 1976; Taylor & Crocker, 1981). They are organized hierarchically and can be triggered in a yes-no fashion (Lord & Foti, 1986). Finally, they serve as the bases of "theory-driven" (Nisbett & Ross, 1981) or "top-down" (Abelson & Black, 1986) information processing. Schemas are usually viewed as "subjective" theories about how the social world operates (Markus & Zajonc, 1985).

Individual schemas, however, are prone to errors, especially the Type II error (Taylor & Crocker, 1981; Kiesler & Sproull, 1982). Due to their preoccupation with previous experiences, individuals are likely to discount new information that is discrepant and resist revision of current schemas. In addition, as a result of cognitive simplification, individuals usually have only a partial picture of their complex environments, or as phrased by Weick (1979b, p.68), "an impoverished view of the world." Individuals possess idiosyncratic versions of social reality in their schemas. Reality must be socially constructed and negotiated (Berger & Luckmann, 1967; Salancik & Pfeffer, 1978; Weick, 1979a). As noted in Table 2.1, Gioia (1986, p.346) provided a nice summary of some major benefits and costs of schematic information processing.

In this dissertation, person-in-situation schemas are the primary focus of interest (Cantor, Mischel, & Schwartz, 1982). I am interested in how organization members view their organizations, with specific reference to the domains of competitive strategy, business culture, and business vision. The study of these organization-specific schemas is important because these

schemas enable members to traverse and orient themselves within organizations (Weick, 1979b), affect members' interpretations, evaluations and definition of organizational realities (Taylor & Crocker, 1981; Kiesler & Sproull, 1982), and provide organization members with bases for activating actual behavior sequences, expectations and enactments (Taylor & Crocker, 1981; Weick, 1979a).

Table 2.1

Benefits and Costs of Schematic Information Processing*

Benefits:

1. Facilitates cognitive economy
2. Imposes structure on organizational experience
3. Allows interpretation of ambiguous situation
4. Speeds information processing and problem solving
5. Supplies missing information with "default options"
6. Furnishes a basis for evaluating people and events
7. Enables prediction of future events and outcomes
8. Provides a basis for action

Costs:

1. Encourages stereotypic thinking
 2. Subverts controlled information processing
 3. Fills data gaps with typical, not veridical, information
 4. Ignores discrepant (and possibly important) information
 5. Biases information processing toward existing schemas
 6. Discourages disconfirmation of present schemas, therefore
 7. Resists revision of current cognitive structures
 8. Inhibits creative problem solving
-

* Adapted from Gioia, 1986, Table 1 and Table 2, p.346

Schema Sharedness

The usefulness of individual schemas in studying individual behaviors has encouraged many researchers to extend the logic from individual phenomena to group and organizational phenomena (Bougon et al., 1977; Hall, 1984; Ranson, Hinings & Greenwood, 1980; Shrivastava & Schneider, 1984; Weick, 1979a). As argued by Bougon et al. (1977, p.626), "what ties an organization together is what ties thoughts together." The study of how thoughts or cognitions of individual members are tied together is a crucial area in the investigation of organizations.

Individual schemas are shared to the extent the knowledge used by individuals in interpreting and defining their realities and experiences are the same (Harris, 1988). However, it is important to distinguish between shared schemas and schema sharedness. While a shared schema implies a supra-individual schema¹ existing on its own, schema sharedness refers to the existence of shared knowledge in individual schemas. Cognitive consensuality is related to schema sharedness, not to shared schema.

Antecedents of Schema Sharedness

While the development of individual schemas is a natural cumulative process built up through individual experiences and learning, the development of schema sharedness is the result of interpersonal and

¹ A supra-individual schema is argued to exist when there are "collective ways of acting or thinking that have a reality outside of the individuals who, at every moment of time, conform to it" (Durkheim, 1895:vi). When a group of individuals work together, some kind of emergent collective knowledge structure is argued to exist. Such a collective knowledge structure transcends the cognitive facilities of any individual member (Walsh, 1989, p.15).

organizational dynamics (Carley, 1987; Goodenough, 1981; Harris, 1988; Weick, 1979a). Literatures indicate that leadership, symbolic management (Peters, 1978; Pfeffer, 1981; Selznick, 1957), behavioral interlocking (Weick, 1979a), and social interaction (Douglas, 1986; Goodenough, 1981; Sproull, 1981) are among the major processes that enhance schema sharedness.

Some studies in leadership (Peters, 1978; Selznick, 1957) and symbolic management (Pfeffer, 1981) suggest that top management's actions play an important role in fostering schema sharedness. Selznick (1957) was most explicit in arguing for the importance of leaders and institutional practices in developing schema sharedness (or, in his term, organizational character). Through the definition of organizational mission and role, and the embodiment and defense of organizational purposes through institutional practices (Selznick, 1957, p.62-63), leaders institutionalize organizational character. Peters (1978) also emphasized the importance of leaders in enhancing schema sharedness of organization members through consistent behavioral patterns, and conscious use of symbols and settings. Pfeffer (1981) similarly argued that symbolic management leads to the creation and maintenance of organizational paradigms.

In addition to top management's deliberate actions, schema sharedness can be developed through the process of organizing. Weick (1979a), for instance, argued that schema sharedness develops through interlocked behavioral cycles in the process of equivocality removal. "Equivocality removal is essentially an interpersonal process and involves at least two members interlocking some behaviors to accomplish this removal"

(Weick, 1979a, p.142). In the process of removing the residual equivocality of individual members, schema sharedness of members is enhanced.

Social interaction is another important process that increases schema sharedness. In a study of how public culture is shared, Goodenough (1981, p.104) described the process through which individual versions of a culture are adjusted to a group version. Through continuous interaction, Goodenough argued, individual versions of public culture are gradually adjusted to a group version that accords better with the expectation of others, especially those in authority. "This process of selective adjustment leads to a modal clustering of the individual versions of what all attribute to the group as its public culture" (Goodenough, 1981, p.104). Douglas (1986) similarly emphasized the importance of social interaction in developing schema sharedness:

Our social interaction consists very much in telling one another what right thinking is and passing blame on wrong thinking. This is indeed how we build the institutions, squeezing each other's ideas into a common shape. (p.91)

Cognitive consensuality and schema sharedness

Cognitive consensuality is the construct to denote the extent (not the content) of schema sharedness of organization members. It examines the degree of "overlap" (Weick, 1979a, p.142), "the modal clustering" (Goodenough, 1981, p.104), and the "common shape" (Douglas, 1986, p.91) of individual organization-specific schemas. It closely matches the idea of psychological penetration suggested by Louis (1985, p.80): the "consistency" or "homogeneity" in the interpretation of shared meanings among individuals in the group. It echoes Harris' (1988, p.47) suggestion that "to the extent that the schemas used to interpret a particular event or

circumstance are shared, the variance between the schemas employed by the various people will be low." Figure 2.1 presents the construct of cognitive consensuality graphically.

Figure 2.1
Schema-Sharedness and Cognitive Consensuality

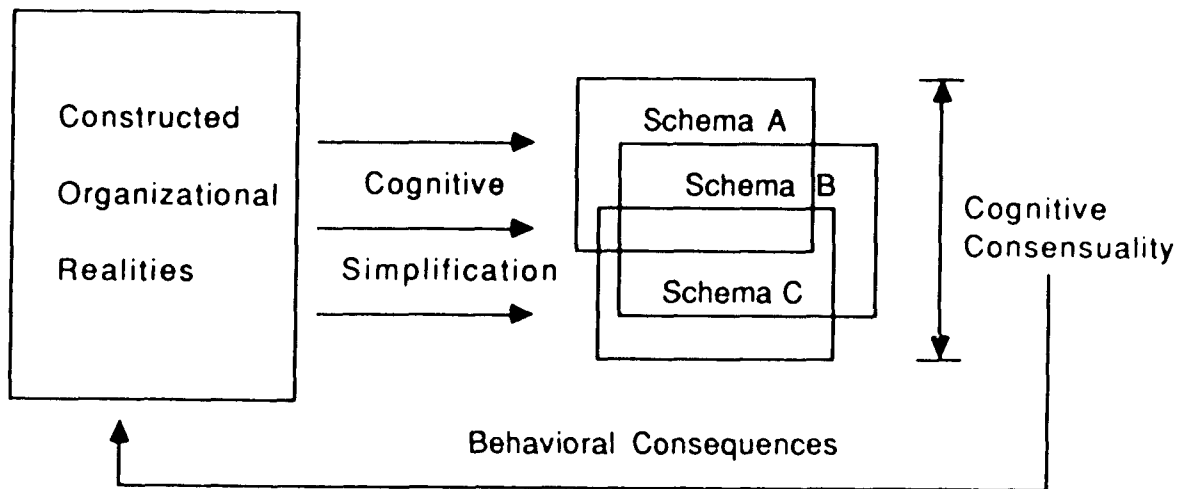


Figure 2.1 depicts the theoretical underpinning of cognitive consensuality. Cognitive consensuality examines the extent to which individuals develop similar schemas of organizational reality. As a result of cognitive simplification, organization members construct individual versions of organizational realities. The extent to which their schemas are shared is the central focus of cognitive consensuality. Using the words of Louis (1985, p.80), cognitive consensuality examines the "interpretive bandwidth" of organization members.

The investigation of cognitive consensuality is significant if one takes seriously Bougon et al.'s (1977, p.626) argument that "what ties an organization together is what ties thoughts together". Cognitive consensuality provides a measure of the tightness of organization, as it indicates the extent to which individual schemas are knitted together. Such tightness of cognitions can be either the result of deliberate efforts from the top (Mintzberg & Waters, 1985; Peters, 1978; Pfeffer, 1981; Selznick, 1957), or spontaneous sensemaking activities and interaction processes among organization members (Mintzberg & Waters, 1985; Sproull, 1981; Weick, 1979a). Regardless of the antecedents, cognitive consensuality of organization members has several behavioral consequences.

First, it affects the coordination among organization members (Gioia & Sims, 1986). When cognitive consensuality is extremely high, schemas of individual members are almost perfectly shared. Any group member is likely to interpret, evaluate and define organizational realities in approximately the same way as any other members in the group. In the extreme case, perfect behavioral predictability is approached (Weick, 1979a). However, at the opposite extreme, when cognitive consensuality of organization members is extremely low, interpretation and behavioral predictability of organization members may be problematic.

Second, cognitive consensuality affects the confidence of organizational enactment (Hrebiniak & Snow, 1982; Weick, 1977b). When cognitive consensuality is extremely high, uncertainty and equivocality among members can be removed easily through sensemaking and interaction, as members are likely to reach agreement on what constitutes reality. Consequently, a "factual" basis of organizational action can be more easily developed, potential stress associated with ambiguity eliminated, and

members charged with the execution of organizational decisions can become more confident and effective in the implementation (Hrebiniak & Snow, 1982). On the contrary, when cognitive consensuality is extremely low, members can hardly construct a shared reality. Consequently, organizational actions are hindered, if not paralyzed.

However, high cognitive consensuality among members is not without costs. When consensuality is extremely high, there is a higher risk that individual critical thinking is transformed into groupthink (Janis, 1982). Members tend to arrive at consensus prematurely, without critically examining their common assumptions and views. As a result, the quality of decisions may suffer. When consensuality is low, the likelihood of developing groupthink should be lower, everything else being equal.

Finally, cognitive consensuality affects organizational adaptability. When cognitive consensuality is high, organization members are more likely to ignore the discrepancies between their shared beliefs and the actual environment. Policy failures are more likely to be explained away (Hall, 1984). Instead of changing their existing beliefs, they may simply intensify or reinforce their current efforts. When consensuality is low, and cognitions of organization members are loosely connected, the chance of organizational adaptability may increase.

Built upon the construct of schema, cognitive consensuality shares some of its dualistic nature. When a schema facilitates interpretation of ambiguous situations and provides bases of action, it also encourages stereotypic thinking and biases information processing toward existing schemas (Gioia, 1986). Cognitive consensuality is similarly dualistic. While high cognitive consensuality increases coordination and confidence of enactment, it also fosters groupthink and organizational inadaptability.

Other Aspects of Schema Sharedness

Other aspects of schema sharedness, though not studied in this dissertation, are important and worth mentioning. The first aspect is the content of schemas that are shared by members in interpreting organizational issues (Dutton & Jackson, 1987; Fiol, 1989; Hall, 1984). Dutton and Jackson (1987), for instance, pointed out that how organization members categorize threats and opportunities may affect organizational actions. In studying a group of managers in a major bank, Fiol (1989) also found that changes in context-specific meanings of a group language led to the acceptance of an organizational innovation. Hall (1984) demonstrated how the departmental cause-effect beliefs at the old Saturday Evening Post affected the organization's policy decisions over a twenty-year period and eventually led to its demise.

The second aspect is the complexity of schemas being shared by organization members (Bartunek, Gordon & Weathersby, 1983; Lurigio & Carroll, 1986; Kiesler & Sproull, 1982; Walsh, Henderson & Deighton, 1988; Weick, 1979a). Complexity is defined as the number of dimensions or categories a schema has in a specific domain. Extending from Ashby's law of requisite variety (Ashby, 1952), researchers have argued that the higher the cognitive complexity of organization members, the more accurate is their problem sensing (Bartunek, et al, 1983; Kiesler & Sproull, 1982; Weick, 1979a). By corollary, schemas that are shared and complex should be more accurate in problem sensing than those schemas that are shared but simple. Walsh et al. (1988), however, found that a group's shared agreement around fewer belief structure dimensions was associated with several indices of superior firm performance. Lurigio and Carroll (1985) similarly found that

more experienced probation officers had fewer but richer (more detailed) schemas than inexperienced officers. Clearly, more research is needed before definite conclusions can be drawn in this area.

A third important aspect is the veridicality (accuracy) of schemas shared by organization members. A schema that accurately captures the information environment is regarded as veridical (Hogarth, 1980; Walsh et al., 1988). Veridicality is an important issue at both the individual and group levels. Members sharing schemas of low veridicality can at best be characterized as having "pluralistic ignorance." Recently, Starbuck and Milliken (1988) added some subtlety to this perspective. They argued that what an executive needs is not totally accurate perception, but a perceptual filter that "amplifies the relevant information and attenuates the irrelevant information" (p.40). Dess and Keats (1987) have also provided partial support for the relationship between the accuracy of environmental perception and organizational performance.

The causal structure of schemas is another area that demonstrates interesting relationships between schemas and organizational behaviors (Bougon et al., 1977; Hall, 1984; Weick & Bougon, 1986). Bougon et al. (1977) demonstrated that the location of the variables in a cause map has a strong association with the perceived influence of the individual over the situation. Variables at the left of dominant links are givens, variables in the middle are means, and variables at the right are ends. Ford and Hegarty (1984, p.286) also found that variables at the left-hand end of a graphically displayed cause map are context factors, in the middle are structure variables, and at the right-hand end performance variables (Weick & Bougon, 1986). In addition to the position of variables in the causal links, the pattern of relationship is equally important. Hall (1984), for instance,

has illustrated that the failure of the Saturday Evening Post to detect a causal loop resulted in the continual deterioration of the business.

Although the utility and importance of studying schemas from other perspectives are recognized (i.e., contents and other structural aspects of schemas), this dissertation focuses on a specific structural attribute of schema sharedness: cognitive consensuality. Two primary reasons contribute to this choice. First, cognitive consensuality, as mentioned in Chapter 1, has received relatively little empirical attention. Moreover, most of the empirical studies are conducted in a narrow and well-defined domain (e.g., strategy, or culture) with small sample sizes (usually fewer than 50). Contradictory results are often reported. A more systematic and comprehensive study is clearly needed to advance knowledge in this area.

Second, cognitive consensuality is theoretically interesting and controversial. While research grounded in cognitive psychology tends to imply that cognitive consensuality may decrease organizational performance (Janis, 1982; Nemeth, 1986; Weick, 1983), researchers in strategic management and organizational culture tend to suggest otherwise: cognitive consensuality should enhance organizational performance (Brockbank & Ulrich, 1990; Dess & Origer, 1987; Ouchi, 1981; Peters & Waterman, 1982). The questions of how (positive vs. negative relationships) and how much (the possibility of a curvilinear relationship) cognitive consensuality leads to what performance outcomes (competitiveness vs. innovativeness) deserve more theoretical integration and investigation.

Cognitive Consensuality and Related Constructs

In this section, cognitive consensuality is compared to several related constructs. Two purposes underlie such a comparison. First, by comparing consensuality with other constructs, a better understanding of the construct can be achieved. Comparison helps to delineate consensuality by indicating what it "is" and what it "isn't." Second, as research focused directly on cognitive consensuality is scanty (Gioia & Sims, 1986), literatures on related constructs are frequently cited throughout the dissertation to provide theoretical insights on the consensuality-performance relationship. The similarities and differences between cognitive consensuality and these constructs need to be specified in the beginning.

Cognitive Consensuality vs. Consensus

First, consensuality is different from consensus. While consensuality refers to the extent of schema sharedness of organization members, consensus focuses on the degree of overt agreement among members over specific objects such as decisions or perceptions. Consensuality and consensus, however, are closely related. Everything else being equal, organization members with higher cognitive consensuality are expected to reach consensus more easily. While consensuality focuses on the underlying structure that governs a decision-making or sensemaking process, consensus focuses on the output of the process.

Cognitive Consensuality vs. Culture, Ideology, Paradigm

Cognitive consensuality is different from organizational culture (Schein, 1985), ideology (Beyer, 1981) and paradigm (Kuhn, 1970; Pfeffer, 1982)². According to Schein (1985), organizational culture refers to:

a pattern of basic assumptions-invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration-that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relations to those problems. (p.9)

Beyer (1981, p.166) defined ideology as "relatively coherent sets of beliefs that bind some people together and that explain their worlds in terms of cause-and-effect relations." Paradigms, used by Kuhn (1970), refers to the shared understanding and assumptions that guide research and instruction in academic disciplines. Other researchers (Brown, 1978; Pfeffer, 1981) have extended the concept to organizational studies. "A paradigm is a way of doing things, a way of looking at the world" (Pfeffer, 1982, p.227).

Remarkable similarities exist among the three constructs, notwithstanding their subtle differences. These constructs all examine shared cognitions (shared assumptions, shared beliefs, shared world views, shared understanding, etc.) that are implicit, invisible and taken-for-granted. Also, they all represent some "subjective theories" that guide "top-down" information processing (Abelson & Black, 1986).

² It is clear that different researchers define organizational culture, ideology and paradigm differently. The works of researchers cited in this paragraph primarily serve to illustrate some basic ideas of each construct.

However, these constructs are different from cognitive consensuality in terms of relative emphases. While organizational culture, ideology and paradigm emphasize both the content and extent of schemas being shared, cognitive consensuality focuses only on the extent of schemas being shared. Cognitive consensuality examines the structural characteristics of shared cognition regardless of the contents of the cognitions being shared.

Organizational culture and ideology differ from cognitive consensuality in another regard. While researchers in organizational culture and ideology stress the normative bases of these constructs (Smircich, 1983; Ouchi & Wilkins, 1985), cognitive consensuality emphasizes the passionless information processing processes that guide the interpretation and evaluation by organization members of organizational realities (Nisbett & Ross, 1981).

Cognitive Consensuality vs. Conformity, Concurrence-seeking

Cognitive consensuality is distinct from two other psychological constructs, namely conformity (Kiesler & Kiesler, 1969) and concurrence-seeking (Janis, 1982). Conformity arises when organization members comply with group norms out of fear of recrimination. Concurrence-seeking, however, develops when organization members strive for group unanimity in order to preserve the unity of the group (Janis, 1982). Conformity occurs when group cohesiveness is low whereas concurrence-seeking happens when group cohesiveness is high (Janis, 1982, p.248).

Both conformity and concurrence-seeking can result in cognitive consensuality. However, cognitive consensuality does not necessarily involve either conformity or concurrence-seeking. Though all three constructs occur in a social context, conformity and concurrence-seeking arise more from the

process of normative social influence whereas cognitive consensuality involves the process of informational social influence (Deutsch & Gerald, 1955).

Cognitive Consensuality vs. Group Composition

Finally, cognitive consensuality and group composition are different from but related to one another. Group composition/demography can best be conceptualized as an observable indicator of invisible cognitive bases or perceptions of organization members (Bantel & Jackson, 1989; Hambrick & Mason, 1984; Murray, 1989; O'Reilly & Flatt, 1986). The assumption is that members with different personal backgrounds (education, functional background, age, tenure, etc.) define and interpret organizational realities differently. By studying the homogeneity and heterogeneity of a group, the extent of schema-sharedness of organization members can be inferred. Homogeneous groups are assumed to have high cognitive consensuality while heterogeneous groups are assumed to have low cognitive consensuality.

Summary of Comparisons

Table 2.2 summarizes the similarities and differences between cognitive consensuality and these related constructs. The related constructs are categorized into three groups. The first group of constructs (conformity, concurrence-seeking, and group homogeneity) are constructs that may lead to cognitive consensuality. The second group of constructs (organizational culture, ideology, and paradigm) are constructs that include both the extent and the content of sharedness. The third construct, consensus, is likely to be a consequence of cognitive consensuality.

Table 2.2
Comparing Cognitive Consensuality with Related Constructs

Related Constructs	Cognitive Consensuality	
	Similarities	Differences
Conformity	Agreement in defining social reality	Compliance due to group pressure/norms
Concurrence-Seeking	Agreement in defining social reality	Unanimity due to group cohesiveness
Group Homogeneity	Cognitive sharing may be arrived	Indicator & antecedent of consensuality
Org. Culture	Sharedness in values, assumptions, etc.	Construct of both extent and content
Org. Ideology	Sharedness in a set of cause-effect beliefs	Construct of both extent and content
Org. Paradigm	Sharedness in views, assumptions, etc.	Construct of both extent and content
Consensus	Agreement on decisions or perceptions of object	A likely consequence of consensuality

Loci of Cognitive Consensuality

In studying cognitive consensuality, another conceptual issue that needs to be addressed is the loci of cognitive consensuality. Borrowing the term from Louis (1985, p.78), "loci of cognitive consensuality" refer to the potential sites in which cognitive consensuality may develop. The choice of the loci of cognitive consensuality is fundamentally important. Because

cognitive consensuality ranges from very low to very high, one can never be sure that low consensuality is a result of specific organizational dynamics or simply the wrong choice of locus. In this regard, choice of locus must be theoretically justified.

Louis (1985, p.79) suggested four possible sites for investigating distinctive culture: around the top of an organization, along a vertical slice of the organization (e.g. division), along a horizontal slice (e.g. a hierarchical level), or in a particular unit (e.g. a department). Louis (1985) suggested these loci because of the following properties:

They are regularly convening settings, they impose structural interdependencies among people performing tasks, they provide opportunities for affiliation, and they constitute constellations of interest or purposes. As such, they serve as breeding grounds, if you will, for the emergence of local shared meanings (p.79).

Cognitive consensuality develops as a result of shared cognition, and therefore the loci suggested by Louis (1985) in her study of culture are applicable to the study of cognitive consensuality. Louis's distinction between a vertical slice and a particular unit, however, is not clear. A particular unit (e.g. a department) can also be a vertical slice that cuts across different hierarchical levels. Hence, modifying Louis's suggestions, four loci of cognitive consensuality that serve as basic units of analysis can be identified for potential investigation: around the top of an organization (among general managers), along a vertical slice (by functional departments), along a horizontal slice (by hierarchical levels), and finally around the whole organization.

Summary

This chapter provides the rationale and perspective for studying cognitive consensuality. The construct is elaborated and clarified by explicitly describing what it is and what it is not. Cognitive consensuality is the study of "overlap," "modal clustering," "common shape," "homogeneity," "consistency," and "variance" of schema sharedness. From a cognitive perspective, it indicates the tightness of organizations (Bougon et al., 1977). However, it is different from the study of consensus, organizational culture, ideology, paradigm, conformity, concurrence-seeking, and group composition. Finally, four possible loci of cognitive consensuality are identified as potential sites of investigation.

CHAPTER 3

COGNITIVE CONSENSUALITY AND ORGANIZATIONAL PERFORMANCE

This chapter examines the relationship between cognitive consensuality and organizational performance. Due to the complexity of the topic, the five research issues posited in Chapter 1 are to be examined in individual sections. Hypotheses are formulated at the end of each section.

Overview of Consensuality-Performance Relationships

Numerous empirical studies related to consensuality-performance relationships have been conducted in recent decades (Bantel & Jackson, 1989; Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; DeWoot, Heyvaert & Martou, 1977-78; Grinyer & Norburn, 1977-78; Hart, 1989; Hrebiniak & Snow, 1982; Janis, 1982; Lawrence & Lorsch, 1967; Murray, 1989; O'Reilly & Flatt, 1986; Walsh, Henderson & Deighton, 1988). The findings are, however, inconsistent and contradictory. In this section, studies supporting both positive and negative consensuality-performance relationships are reviewed.

Although most of these studies have focused primarily on the relationship between group composition or consensus of the top management team (TMT) and organizational performance, their findings are relevant to the present study. As group composition (an antecedent of consensuality) and consensus (a consequence of consensuality) are closely related to consensuality, the review of these literatures is considered appropriate,

especially in view of the scanty research focused directly in the area of cognitive consensuality. By examining the relationships between group composition/consensus and performance, some insights on the relationships between cognitive consensuality and performance can be developed. Table 3.1 provides a brief review of related studies.

Table 3.1

Review of Empirical Studies Related to the Consensuality-Performance Relationship

Study	Construct	Sample & Method	Dependent Variable	Key Findings
Bourgeois (1980)	Consensus on goals & means	TMTs in 12 public corp.	ROTA Growth in capital, earnings, EPS, ROS	Consensus on means leads to higher performance. Dissensus on less tangible goals leads to higher performance.
Bourgeois (1985)	Consensus on environ. uncertainty & goals	TMTs in 20 public corp.	Same as Bourgeois (1980)	Performance varies directly with accuracy of environmental perception and inversely with consensus in goals & uncertainty
Hrebiniak & Snow (1982)	Consensus on firm's strengths & weaknesses	TMTs in 88 firms in 4 industries	ROA	Positive relationship between consensus and performance. Consensus is most strongly related to performance at the end of same year
Dess (1987)	Consensus on goals & means	TMTs in 19 firms in 1 industry	Subjective measures & self-reported objective measures in sales growth & profitability. Overall performance (subjective measure).	Positive consensus-performance relationships in both goals & means consensus even after another consensus measure is controlled.

Study	Construct	Sample & Method	Dependent Variable	Key Findings
Dess & Keats (1987)	Consensus on multiple environ. dimensions	TMTs in 22 firms in 1 industry	Same as Dess (1987)	Positive consensus-performance relationship. Performance also positively relates to accuracy in environmental perception.
Grinyer & Norburn (1977-78)	Consensus on goals	TMTs of 21 UK firms in 13 industries	Return on net assets	Negative consensus-performance relationship
DeWoot, Heyvaert & Martou (1977-78)	Consensus on means for innovation activities	Managers in 168 Belgian firms	L-T profitability: 15-year trend (profit/equity)	Negative consensus-performance relationship was found among the more successful firms in the study of innovation activities.
Walsh et al. (1988)	Consensus in marketing decisions	Simulation. 29 competing teams.	Net profit, ending market share, & return	Positive consensus-performance relationship. Realized consensus (consensus weighted by participation score of members) is especially important.
O'Reilly & Flatt (1986)	Group composition	TMTs of 40 Fortune 500 firms in 2 industries	Perceived innovativeness by industry experts	Positive relationship between group homogeneity (date of entry) and organizational innovation
Bantel & Jackson (1989)	Group composition	TMTs of 199 banks in Midwest.	Number of technical, administrative and total innovations	Heterogeneity of functional backgrounds and average education increase org. innovations.
Murray (1989)	Group composition	TMTs of 84 Fortune 500 food & oil firms studied from 1967 to 1981	S-T Perf.: earnings to sales, total capital, net worth, & equity. L-T Perf.: stock price-earnings, stock price-book value ratios.	Temporal heterogeneity (a composite factor) predicts L-T performance of firms in oil industry.

Study	Construct	Sample & Method	Dependent Variable	Key Findings
Janis (1982)	Groupthink	Senior policy makers in admin. of 5 presidents	Quality of assumptions & recommendations in policy decision	Concurrence-seeking tendency of group members led to policy fiascoes.
Schweiger, et al. (1986)	Modes of decision making	120 students Laboratory study	Group performance & perception of members	Dialectical inquiry & devil's inquiry led to higher quality recommendations & assumptions but members in consensus group express higher satisfaction, acceptance of group decision, and desire to continue work.
Hart (1989)	Modes of strategic decision making	916 CEOs in Michigan	Competitive performance in 3 factors: profit, quality, and growth	Symbolic mode of strategic decision making (based on shared business vision) is the strongest predictor on profit & quality, and the second strongest predictor on growth.

Empirical Support For A Positive Consensuality-Performance Relationship

Several empirical studies support the positive relationship between consensuality and organizational performance (Bourgeois, 1980; Hrebiniak & Snow, 1982; Dess, 1987; Dess & Keats, 1987; Hart, 1989; O'Reilly & Flatt, 1986; Walsh et al., 1988). Bourgeois (1980) studied the relationship between top management consensus and organizational performance in 12 non-diversified public corporations and found that "consensus on means always yields higher performance than disagreement on means" (1980, p.243). Hrebiniak and Snow (1982) similarly found evidence from a survey of 247 top-level managers from 88 firms in 4 industries that organizational

performance and top managers' consensus on the strengths and weaknesses of their firms are positively related. Dess (1987) found a positive relationship between organizational performance and TMT's consensus on means and goals for a sample of 19 firms in a highly competitive industry (paints and allied products). In another study with the same sample (but 3 more firms), Dess and Keats (1987) also illustrated that consensus of TMT on multiple environmental dimensions has significant impacts on organizational performance.

In studying the relationship between modes of strategic decision making and organizational performance among 916 top managers, Hart (1989) found that symbolic mode of strategy decision making (characterized by shared business vision) had the most significant impact on profit and product/service quality, and the second most significant impact on the growth of organizations, in comparison with three other modes of strategy decision making. The study indirectly supports the importance of cognitive consensuality in affecting organizational performance.

Based on the theory of social integration, O'Reilly and Flatt (1986) demonstrated in their study of 40 Fortune 500 firms that homogeneity of TMT is positively associated with organizational innovation after controlling for alternative explanations. Organizational innovation is in turn significantly related to the subsequent financial performance of the firm. Imai, Nonaka and Takeuchi (1984), in a study of innovation in large Japanese firms, also provided evidence that homogeneity in management can enhance innovation.

Walsh, Henderson and Deighton (1988) in a simulation of 29 firms found that realized consensus is significantly correlated with three performance measures (net profit, ending market share, and return). They

concluded, "high consensus is associated with superior firm performance" (Walsh et al., 1988, p.16).

Theoretical Support For A Positive Consensuality-Performance Relationship

Theoretical linkages between consensuality and performance are suggested in some of the above empirical studies. Together with linkages implied in other theoretical studies, this section integrates and summarizes the processes or mechanisms through which consensuality positively influences organizational performance. Recognizing interrelationships among these linkages, the positive consensuality-performance relationship can be understood in five different ways.

First, cognitive consensuality works as a control or governance mechanism. Drawing on the transaction cost paradigm, Wilkins and Ouchi (1983) argued that organizations with high cognitive consensuality (shared paradigm) may incur reduced costs of communication and coordination and thus increase efficiency. Cognitive consensuality is especially important when complex and uncertain transactions are involved in accomplishing the organization's tasks because "the interdependence and required communication allow for many possible misunderstandings The paradigm ... however, may provide shared frameworks, languages, and referents that can help members start from similar assumptions in deriving solutions to previously unfamiliar problems" (Wilkins & Ouchi, 1983, p.475).

Second, cognitive consensuality increases organization members' confidence in their enactments (Weick, 1977b). When members use similar knowledge structures to interpret and evaluate organizational events, an

agreement can be reached easily on what constitutes reality. The more the members agree, the more "objective" the reality may appear. Hence, cognitive consensuality helps absorb uncertainty, remove equivocality, increase predictability of means-ends relationships, and consequently provides more confidence in enacting and implementing strategies (Hrebiniak & Snow, 1982; Weick, 1977b).

Third, cognitive consensuality facilitates coordination and organizational action. Gioia and Sims (1986, p.8) asserted that "cognitive consensuality is extremely important for organizational systems, because concerted action frequently depends on cooperation and a certain degree of shared values and understanding of 'how things are done'. Thus, cognitive consensuality facilitates organizational action." Similarly, Weick (1979a, p.142) argued that the more overlap in the separate cause maps of organization members, the greater likelihood that organization members will more tightly interlock their activities. Consequently, better coordination and concerted organization actions among members enhance organizational performance. The importance of coordination and communication among members is also emphasized by O'Reilly & Flatt (1986) based on their social integration theory.

Fourth, cognitive consensuality increases the concentration of organizational resources and efforts in attaining organizational ends. The underlying assumption of this argument is that if members think similarly, they will act similarly. Acting similarly is important as it helps to minimize waste due to inconsistent and unrelated tactics and to focus organizational resources in a targeted direction. Porter (1980) argued that it is rarely possible for an organization to undertake more than one of the three generic strategies because "effectively implementing any of the three generic

strategies usually requires total commitment and supporting organizational arrangements that are diluted if there is more than one primary approach" (p.35). Porter predicted that organizations that pursue a mix of strategies have lower performance.

Finally, cognitive consensuality promotes organizational cohesiveness and commitment. Extended from Heider's (1958) balance theory, it is argued that members like each other more if they cognize organizational events similarly. Shrivastava and Schneider (1984, p.801-802) similarly stated that shared frames of reference within organizations "facilitate organizational cohesiveness and stability by providing members a framework through which they can interpret the organizational world." Organizational cohesiveness enhances organizational performance through higher commitment and satisfaction of organization members (Denison & Mishra, 1989).

Empirical Support For A Negative Consensuality-Performance Relationship

Empirical studies supporting the negative consensuality-performance relationship are also numerous (Bantel & Jackson, 1989; Bourgeois, 1980, 1985; DeWoot, Heyvaert & Martou, 1977-78; Grinyer & Norburn, 1977-78; Janis, 1982; Murray, 1989; Schweiger, Sandberg & Ragan, 1986). Broadly speaking, they can be categorized into three groups of research: group composition of TMT (Bantel & Jackson, 1989; Murray, 1989), TMT consensus on environment, goals, and methods (Bourgeois, 1980, 1985; DeWoot, Heyvaert & Martou, 1977-78; Grinyer & Norburn, 1977-78), and finally, quality of group decision making (Janis, 1982; Schweiger et al., 1986).

Contrary to O'Reilly and Flatt's (1986) study, Bantel and Jackson (1989) found that group heterogeneity (functional heterogeneity and educational level) of top managers significantly predicts organizational innovation in 199 banks. As they argue, "cognitive diversity is a valuable resource...The need to reconcile dissimilar solutions stimulates effective group discussion, prevents 'group-think', and leads to high quality and original decisions" (p.109).

Murray's (1989) study of 84 Fortune 500 firms in the food and oil industries also found that temporal heterogeneity (a composite factor of variance in age, mean tenure with the firm, variance in tenure with the firm, and mean tenure with the top management group) significantly predicts the long-term performance of companies in the oil industry. The findings indicate both the potential importance of cognitive diversity in enhancing performance and industry effects in the consensuality-performance relationship.

Bourgeois (1980) studied the relationships between performance and consensus on both goals and means in 12 non-diversified public corporations and found that "disagreement on less tangible goals tends to be associated with better performance" (1980, p.243). In another study (1985), he again found that diversity of opinion within the TMT on goals and perceived environmental uncertainty was positively related to firm performance.

Grinyer and Norburn (1977-78), through interviews with 91 managers in 21 British companies in 13 different industries, found that the relationship between consensus on organizational goals and performance is negative, especially among the financially successful firms. They concluded that

The hypothesis that there is, in general, a positive correlation between the extent of agreement between perceptions of executives and financial performance must be unequivocally rejected (p.85).

Similarly, DeWoot, Heyvaert and Martou (1977-78) found a negative relationship between consensus on means and performance among the more successful firms in their sample of 168 Belgian firms.

Janis's (1982) study of groupthink is one of the most important references in the study of the consensuality-performance relationship. Using five case studies of major fiascoes during the administrations of five U.S. presidents, Janis illustrated how the concurrence-seeking tendency of group members leads to poor decisions. Groupthink usually involves cognitive consensuality when a group develops and shares the same views, assumptions, and beliefs. As argued by Janis,

When a group of people who respect each other's opinions arrive at a unanimous view, each member is likely to feel that the belief must be true. This reliance on consensual validation tends to replace individual critical thinking and reality-testing, unless there are clear-cut disagreements among the members (p.37).

Groupthink is usually characterized by overestimation (illusion of invulnerability and unquestioned belief in the group's inherent morality), close-mindedness (collective rationalization and stereotypes of out-groups), and pressures toward uniformity (self-censorship of deviations, illusion of unanimity, direct pressure on dissenters, and self-appointed mindguards) (Janis, 1982). As a result, it leads to an incomplete survey of alternatives and objectives, failure to examine risks of the preferred choice and to reappraise initially rejected alternatives, poor information search, selective bias in processing information, and failure to work out contingency plans (Janis, 1982, p.244).

The symptoms and consequences of groupthink may apply to cognitive consensuality if the consensuality is extremely high. As noted by Weick (1979a, p.156), "the phenomenon of groupthink is important because it demonstrates some of the dysfunctional consequences when people are dominated by a single schema [i.e. perfect consensuality]".

Schweiger, et al. (1986) compared the relationships between three kinds of decision making and group performance. Decision by consensus was found to result in lower overall quality of assumptions and recommendations, compared to decision by dialectical inquiry and devil's advocacy. As groups or organizations with high cognitive consensuality are more likely to reach decisions by consensus (unless structural and procedural precautions are taken), their performance may be lowered as a result of poor decisions.

Theoretical Support For A Negative Consensuality-Performance Relationship

Theoretical arguments for the negative consensuality-performance relationship should also be explicitly specified. In addition to the empirical studies reviewed above, additional theoretical writings help to explain the relationship.

First, cognitive consensuality lowers organizational performance because it may encourage organization members to agree prematurely without a critical scrutiny of alternative courses of action and assumptions (Janis, 1982). As mentioned earlier, cognitive consensuality may encourage the symptoms and consequences of groupthink. Everything else being equal

(in terms of both structural and procedural contingencies), the higher the cognitive consensuality, the more likely the occurrence of groupthink.

Nemeth (1986) also argued that the major contribution of a dissenting minority is to make the majority cognitively active. It makes them think. Hence, some degree of cognitive diversity (the existence of a dissenting minority) is constructive, because it increases the cognitive efforts of the group.

Clearly, research in both groupthink (Janis, 1982) and minority influence (Nemeth, 1985; 1986) has a common concern with the cognitive efforts exerted in group decision making. Cognitive efforts in turn affect organizational performance through the quality of decisions.

Second, cognitive consensuality lowers organizational performance because it simplifies rather than complicates the understanding of organization members. Ashby's (1952) law of requisite variety states that only complexity can regulate or control complexity. In order to register and map the environment accurately, Weick (1979a) argued that a good sensor should have multiple, independent, and weakly constrained elements. Organizations with high consensuality, as characterized by largely overlapped schemas, are less likely to sense environmental complexity accurately¹. Inaccurate environmental sensing may lead to the formulation of inappropriate strategies and the attainment of undesirable outcomes.

Finally, cognitive consensuality may hinder adaptability. While acknowledging the importance of cognitive consensuality, Gioia and Sims (1986, p.8) admitted that "cognitive consensuality can also retard

¹ The argument here is that cognitive diversity among group members complicates the thinking of the whole group. However, it is recognized that schemas that are shared can be complex if individual schemas are complex (see Chapter 2).

organizations and is perhaps the most reasonable explanation why organizations can be slow to change." As members share similar schemas, their cognitions reinforce each other and become more firmly anchored. Consequently, change in individual schemas becomes much more difficult as discrepancies between beliefs and realities are more likely to be ignored and explained away (Hall, 1984). Change in individual schemas also necessitates a more coherent and sweeping change in schemas of other group members. As a result, adaptability of organizations in the long run becomes more problematic (Starbuck, 1983).

Table 3.2 summarizes the theoretical arguments of both positive and negative relationships between consensuality and performance.

Table 3.2

Theoretical Arguments of Consensuality-Performance Relationships

Consensuality positively affects performance through	Consensuality negatively affects performance through
<ul style="list-style-type: none"> * Efficiency of Control (Wilkins & Ouchi, 1983) * Confidence in Enactment (Hrebiniak & Snow, 1982; Weick, 1977b) * Coordination/Org. Action (Gioia & Sims, 1986; Weick, 1979a) * Concentration of Resource and Effort (Dess & Origer, 1987; Porter, 1980) * Cohesiveness/Commitment (Shrivastava & Schneider, 1984) 	<ul style="list-style-type: none"> * Decrease in Cognitive Efforts (Janis, 1982; Nemeth, 1986) * Simplification vs Complication (Ashby, 1952; Weick, 1983) * Inadaptability (Starbuck, 1983; Weick, 1977a)

Potential Contingency Factors

The arguments for positive and negative consensuality-performance relationships seem incompatible and contradictory on the surface. A closer examination finds that both kinds of relationship may be reconciled through the specification of additional contingency variables, including the existing level of consensuality, the time horizon, and the nature of problem solving.

First, whether the relationship between consensuality and performance is positive or negative may depend on the degree of consensuality an organization already has. As argued by Weick and Bougon (1986, p.108) in the study of cause maps, "some amount of a variable is good, but too much of the same variable is bad (or vice versa)." If an organization is low in consensuality, additional consensuality may enhance organizational performance by providing more control, coordination, and cohesiveness among organization members. If an organization is high in consensuality, further consensuality may simply diminish organizational performance. The likelihood of suffering groupthink, the simplification of environmental sensing and the rigidity of organizational response may increase among organization members. The logic is comparable to the concept of marginal utility in economics. The marginal utility of an extra unit of consumption can be both positive or negative, depending on the amount of consumption an individual already has. A direct implication of this observation is that the consensuality-performance relationship may be curvilinear (Priem, 1990), contingent upon the extant consensuality level of the organization.

Second, researchers arguing for a positive consensuality-performance relationship seem to focus more on organizational performance in the short run-better performance as a result of more efficiency (Wilkins & Ouchi, 1983), better coordination (Gioia & Sims, 1986), and so forth. Researchers arguing for a negative consensuality-performance relationship examine organizational performance from a longer time perspective. Better performance is achieved through higher adaptability (Weick, 1977a, 1979a) and better environmental sensing.. An implication of this observation is that consensuality can both increase and decrease organizational performance, depending on what performance outcomes are being studied. Consensuality can lead to higher immediate competitiveness but lower future adaptability (Murray, 1989; Weick, 1979a).

Third, the consensuality-performance relationship may depend on the nature of problems being solved. Filley, House and Kerr (1976) concluded in their summary of research on group heterogeneity and performance that routine problem-solving is best handled by a homogeneous group, and that ill-defined, novel problem-solving is best handled by a heterogeneous group in which diversity of opinion, knowledge, etc. allows a thorough airing of alternatives. Because group homogeneity and cognitive consensuality are related (Davis, 1969; Priem, 1990; Shaw, 1976), the nature of the problem-solving task is relevant to the study of the consensuality-performance relationship. The nature of problem solving in an organization, however, is determined partly by the environmental stability the organization faces (Hambrick and Mason, 1984). While organizations in a stable environment are likely to deal with problems that are familiar and routine, organizations in a changing environment are more likely to handle problems that are ill-defined and novel. Hence, an implication from this observation is that

environmental dynamism may moderate the consensuality-performance relationship. The consensuality-performance relationship should be positive in stable environments and negative in less stable environments (Priem, 1990).

In the next three sections, the possible roles of curvilinearity, type of performance outcomes, and environmental dynamism in influencing the consensuality-performance relationship are further specified. In addition, two issues, that are not currently debated but which will make the systematic assessment of the consensuality-performance relationship more comprehensive, are the domain of consensuality and the scope of consensuality. These five issues together will be elaborated in the following sections.

Curvilinear Relationship Between Cognitive Consensuality and Organizational Performance

Most research on the consensuality-performance relationship has examined only the linear relationship between consensuality and performance (Bantel & Jackson, 1989; Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982; Murray, 1989; O'Reilly & Flatt, 1986). Statistical techniques which assume linearity (correlation and regression) are frequently used without adequately examining the linearity assumption. The focus has been on positive or negative relationships between consensuality and performance, without investigation of the possibility of a simultaneous positive-negative relationship in a curve. The fact that current empirical studies report both positive (Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982) and negative (Bourgeois, 1980,

1985; Grinyer & Norburn, 1977-78) consensuality-performance relationships on similar performance outcomes should serve as a catalyst to explore such a possibility.

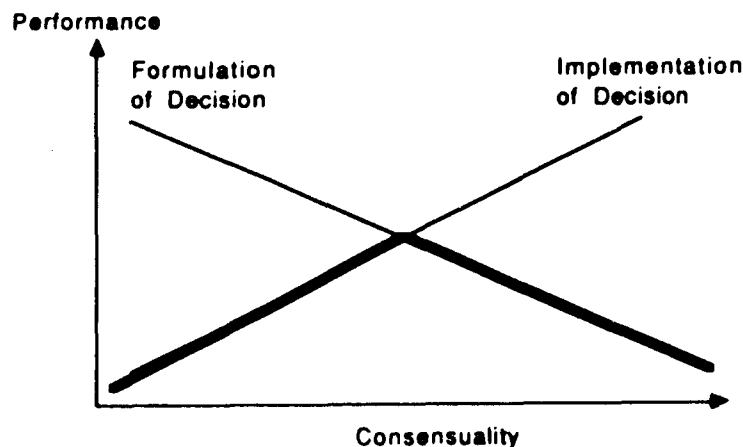
As mentioned earlier (refer to Table 3.1), consensuality is argued to enhance performance because of several organizational processes and mechanisms: better control (Murray, 1989; Wilkins & Ouchi, 1983), increased confidence in enactment (Hrebiniak & Snow, 1982; Weick, 1977b), enhanced coordination and organizational action (Gioia & Sims, 1986; Weick, 1979a), targeted concentration of resources and efforts (Dess & Origer, 1987; Porter, 1980), and more cohesiveness and commitment among organization members (Shrivastava & Schneider, 1984). Interestingly, all these processes and mechanisms are more or less related to the implementation of organizational decisions. The higher the cognitive consensuality among organization members, the more likely the organizational decisions will be implemented efficiently and effectively.

On the other hand, cognitive consensuality is argued to decrease organizational performance because of the following processes and mechanisms: less cognitive effort in group decision making processes (Janis, 1982; Nemeth, 1986), less accurate environmental sensing (Ashby, 1952; Weick, 1983), and lower organizational adaptability (Starbuck, 1983; Weick, 1977a). These processes and mechanisms are all more or less related to quality and accuracy in the formulation of organizational decisions. The higher the cognitive consensuality among organization members, the less likely that organizational decisions will be thoroughly examined, accurately defined, and flexibly revised to meet new contingencies.

Clearly, a tradeoff between the formulation and the implementation of organizational decisions in the consensuality-performance relationship is

recognized. Such a tradeoff, as graphically depicted in Figure 3.1, forms the theoretical rationale of a curvilinear relationship between cognitive consensuality and organizational performance. When cognitive consensuality is low, groups or organizations may be able to formulate high quality decisions and recommendations (Schweiger et al., 1986). However, organizational performance is restricted due to the poor implementation of the decisions. When cognitive consensuality is high, groups or organizations may be able to implement organizational decisions efficiently and effectively. However, implementing a poor decision very well is not likely to help organizational performance. Hence, by managing the tradeoff between the formulation and implementation of organizational decisions, the best performing organizations may be those that can formulate reasonably good decisions and implement them fairly efficiently and effectively. Organizations with optimal performance may be characterized as those with moderate cognitive consensuality, rather than those at the extreme ends. Figure 3.1 illustrates such an argument.

Figure 3.1
Curvilinear Consensuality-Performance Relationship



The proposed curvilinear relationship is partly supported in related studies of consensuality. For instance, both Bourgeois (1980) and Dess (1987) indicated that too much consensuality may be dysfunctional. Bourgeois (1980) found that organizations with consensus on both goals and means did not perform as well as organizations with consensus on means but dissensus on goals. Dess (1987) also concluded that "additional efforts on the part of management to achieve a consensus among members of the TMT on both objectives and methods may not enhance the organization's performance beyond that obtained by achieving a consensus on only one" (p.273). Based upon these observations, Priem (1990) has similarly proposed a curvilinear consensuality-performance relationship.

A curvilinear relationship is also observed in studies of other phenomena. For instance, Weick and Bougon (1986) argued in their study of cause maps that "some amount of a variable is good, but too much of the same variable is bad (or vice versa)" (p.108). Curvilinear relationships are also identified in other psychological experiences and phenomena, including individual arousal (Yerkes & Dodson, 1908; Weick, 1985b) and group cohesiveness (Janis, 1982).

Sullivan and Nonaka's (1986) organizational learning proposition that variety amplification and variety reduction can occur simultaneously in high-performing organizations also supports the proposed relationship. Optimal performance may be achieved through a simultaneous combination of diversity (variety amplification) and consensuality (variety reduction).

In advancing prescriptions for self-designing organizations, Hedberg, Nystrom and Starbuck (1976) argued that "an organization can extract advantages from both consensus and dissension simultaneously. Balance

implies that consensus does not become regimentation and dissension does not become warfare" (p.56).

Given both empirical controversies in the consensuality-performance relationship and theoretical support in some related studies, the possibility of a curvilinear consensuality-performance relationship is investigated in this dissertation. By examining assumptions of both the linear and curvilinear relationships, it is hoped that this dissertation may integrate and extend existing empirical studies in this area. This leads me to the following hypotheses:

- Hypothesis 1: Cognitive consensuality and organizational performance are curvilinearly related.
- Hypothesis 1A: The consensuality-performance relationship deviates significantly from linearity.
- Hypothesis 1B: When the cognitive consensuality of organization members is low, cognitive consensuality is positively associated with organizational performance.
- Hypothesis 1C: When the cognitive consensuality of organization members is high, cognitive consensuality is negatively associated with organizational performance.

It is clear that Hypothesis 1A is the prerequisite of Hypotheses 1B and 1C. If the consensuality-performance relationship is linearly related, further examination of Hypotheses 1B and 1C is not crucial.

Performance Outcomes and Consensuality-Performance Relationships

Organizational performance is multidimensional (Cameron & Whetten, 1983; Steers, 1975) and organizational outcomes are often not compatible, e.g., cohesion vs. accuracy (Weick, 1983), adaptation vs. adaptability (Weick, 1979a), short-term performance vs. long-term

performance (Murray, 1989). In pursuing one specific end, organizations may have to make some sacrifices with regard to another end. This is the concept of tradeoff (Weick, 1983).

In discussing the design of organizational structure, Weick (1983) illustrated the cohesion-accuracy tradeoff in academic communities:

Differentiated structures are well designed to sense and represent a referent situation such as a problem ..., but poorly designed to preserve, develop, and disseminate the material that is sensed. Structures that are less differentiated, more homogeneous, and more tightly coupled have less difficulty with development and assimilation, but more difficulty with accurate sensing (p.257).

By designing organizational structures loosely or tightly, universities are making choices between accurate sensing of phenomena on the one hand, and preservation, development and assimilation of knowledge on the other.

If the cognitive structures of organization members are related to organizational structures (Carley, 1986; Gioia & Sims, 1986; Lawrence and Lorsch, 1967), Weick's arguments of organizational structure may engender some insight into cognitive consensuality. When cognitive structures of members are tightly related (high consensuality), organization members may have higher cohesion and better coordination. When cognitive structures of members are loosely related (low consensuality), organization members may have better sensing of environments and problems. But the central message is that organizations have to make a choice. And the choice they make may lead to different organizational outcomes.

In another study, Weick (1979a) discussed the adaptation-adaptability tradeoff. Derived from the enactment-selection-retention model, Weick illustrated the inherent tension between enactment and retention. Enactment, a process of critical importance to environmental

adaptability, requires variations to update organizational sensemaking and interpretation. Retention, the accumulated wisdom from previous or current adaptations, restricts the bracketing of future environmental variations for further adaptation. As argued by Weick (1979a),

Under what conditions does adaptation preclude adaptability? Organizations that acquire an exquisite fit with their current surroundings may be unable to adapt when those surroundings change. Organizations that hedge against an exquisite fit may also dissolve when placed in competition with those that do have a better momentary fit. This tension pervades all of organizing and injects the dynamic that keeps organizing decisions consequential (p.135-136).

In other words, organizations that adapt too well in current competition may be handicapped in adjusting to future competition when their environments change. Organizations that hedge against future adaptability may fail in current competition. The tradeoff between short-term competitiveness and long-term viability is acknowledged.

Murray (1989) explicitly tested the implications of group homogeneity vs. group heterogeneity of TMT on short-term and long-term organizational performance. A homogeneous TMT is argued to perform better in the short-term whereas a heterogeneous TMT is superior in the long-term. The hypotheses were partially supported as heterogeneous TMTs are found to have significant effects on the long-term organizational performance for firms in the oil industry. As group composition is related to cognitive consensuality, Murray's study implies that high cognitive consensuality (homogeneous group) may have more influence on short-term performance while low cognitive consensuality (heterogeneous group) may have more impact on long-term performance.

Competitiveness and Innovativeness

Because consensuality-performance relationships may vary with different performance outcomes (e.g., adaptation vs. adaptability, short-term vs. long-term), different indicators of organizational performance should be included to provide a more thorough examination of the relationship. While recognizing the availability of a large number of performance indicators (Steers, 1975; Cameron & Whetten, 1983), this dissertation identifies two organizational outcomes that are frequently used in empirical studies related to consensuality and that may tap the differences in consensuality-performance relationships: competitiveness (Dess, 1987; Dess & Keats, 1987; Hart, 1989) and innovativeness (Bantel & Jackson, 1989; O'Reilly & Flatt, 1986). The specification of consensuality-performance relationships with reference to different performance outcomes is important as it may resolve some conflicting findings in the area.

Organizational competitiveness refers to the comparative performance of an organization in relation to its competitors that are similar in markets, size, and so on (Dess, 1987; Dess & Robinson, 1984; Dess & Keats, 1987; Hart, 1989; Venkatraman & Ramanujam, 1987). Comparisons are usually made in multiple dimensions, especially with reference to the throughputs (e.g., production capacity, research and development capability, marketing strengths) and the outputs of organizations (e.g., return on assets, financial performance) (Dess, 1987; Dess & Keats, 1987; Hart, 1989). The time referent of comparison usually focuses on the immediate past and the present. Hence, it is a measure of short-term performance.

By comparing the outputs of an organization to those of its relevant competitors, competitiveness also reflects organization members'

assessments of how well an organization manages or adapts to the critical contingencies and requirements imposed by its environment. Hence, it is also a measure of current adaptation of an organization. Though organizational competitiveness is primarily a subjective performance measure, it is considered as valid because recent research has demonstrated the method convergence between objective and subjective measures (Bourgeois, 1980; Dess, 1987; Dess & Robinson, 1984; Hart, 1989; Venkatraman & Ramanujam, 1987).

Recent studies using competitiveness as a performance indicator in the examination of the consensuality-performance relationship usually find a positive relationship between consensuality and performance (Dess, 1987; Dess & Keats, 1987; Hart, 1989). For instance, Dess (1987) found a significant positive relationship between consensus (on both company objectives and competitive methods) and competitiveness². A similar relationship between consensus on multiple environmental dimensions and competitiveness was reported by Dess and Keats (1987). Hart's (1989) study of strategic modes also found that the symbolic mode of strategic decision making (characterized by high schema sharedness) has the strongest positive influence on several competitiveness measures.

Innovativeness, in this dissertation, refers to the capacity of organizations to develop and introduce new products (not just inventions) (Bantel & Jackson, 1989). Researchers do not agree on a single definition of innovation. It can be used at least in three different senses: innovation as a process; innovation as discrete items or products; innovation as an attribute

² Interestingly, Dess (1987) found the correlations between consensus and absolute performance measures (in contrast to competitive performance measures) insignificant.

of organizations (Kimberly, 1981; Bantel & Jackson, 1989). Conceptually, these three uses of the term are interrelated. As argued by Bantel and Jackson (1989),

When a firm is described as 'innovative' it generally means that the firm frequently develops (or adopts) innovative products, programs, or services for its own use and/or to sell. In other words, the innovation 'process' culminates with innovation 'items', and firms that cycle through the process relatively frequently are described as 'innovative' (p.108).

This dissertation concurs with Bantel and Jackson's (1989) definition of organizational innovation and operationalizes organizational innovativeness as the number of products or services introduced by an organization.

Conceptually, organizational innovativeness is appropriately conceived as an indicator of long-term organizational performance and organizational adaptability. Organizations that compete well in current product markets may lose future competitiveness if they are incapable of introducing new products or services. Innovativeness reflects the potential capacity of organizations to meet future environmental changes. As conceptualized by Lawrence and Lorsch (1967, p.39), innovativeness is "a measure of future potential performance" of organizations.

Researchers generally agree that innovation involves two basic processes: discovery of an idea (or creativity in new product/service design), and implementation of the idea (Damanpour & Evan, 1984; O'Reilly & Flatt, 1986; Utterback, 1974; Zaltman, Duncan & Holbek, 1973). Cognitive consensuality of organization members plays different roles in each of these processes and hence contributes differently to organizational innovativeness. Research on minority influence (Nemeth, 1985, 1986) and group composition (Bantel & Jackson, 1989; O'Reilly & Flatt, 1986) provides

insights on the plausible relationship between consensuality and innovativeness.

Nemeth (1985, 1986) argued that minority influence enhances creativity by stimulating considerations of the nonobvious. "Subjects detected novel solutions (Nemeth & Wachtler, 1983), used more varied strategies (Nemeth & Kwan, 1985b), and thought in more original ways (Nemeth & Kwan, 1985a)" (Nemeth, 1986, p.29). Hence, Nemeth (1986, p.30) concluded that diversity of views (low cognitive consensuality) is seen as an aid to creativity. Based upon research of minority influence, cognitive consensuality is argued to be negatively related to innovativeness due to its effects on creativity.

Assessing the relationship between TMT composition and organizational innovation, O'Reilly and Flatt (1986) suggested two contrasting predictions:

First, heterogeneity in the age and length of service of top management teams may be positively associated with more divergent perspectives on problems and, therefore, associated with increased creativity and innovation (e.g., Baty, Evan & Rothermel, 1971; Katz, 1982; Pelz & Andrews, 1966; Pfeffer, 1983). Alternatively, homogeneity among top management may be associated with more effective communication and higher levels of social integration, leading to faster implementation of new approaches and higher levels of organizational innovation (e.g., Eisenhardt & Bourgeois, 1986; Ettlie, 1985; Galaskiewicz & Shatin, 1981; Lincoln & McBride, 1985) (p.4).

Both predictions are empirically supported. For instance, while O'Reilly and Flatt (1986) discovered a positive relationship between TMT homogeneity and organizational innovation, Bantel and Jackson (1989) found a negative relationship between TMT homogeneity and organizational innovation.

As group composition affects cognitive consensuality of group members, research in group composition may imply contradictory

relationships between cognitive consensuality and organizational innovativeness. Clearly, more research is needed before any clear conclusions can be drawn. Nevertheless, consensuality and innovation are hypothesized to be negatively related in this dissertation for two reasons. First, research on minority influence suggests that cognitive consensuality and innovation are negatively related. Second, while O'Reilly and Flatt (1986) empirically examined the relationship between TMT composition and innovation, they operationalized innovation in a way different from this dissertation. On the other hand, Bantel and Jackson's (1989) operationalization of innovation is identical to the one used in the present study.

This section concludes by stating the following hypotheses in the consensuality-performance relationship:

- Hypothesis 2: The consensuality-performance relationship varies with performance outcomes.
- Hypothesis 2A: The consensuality-performance relationship is positive when organizational competitiveness is used as the performance outcome.
- Hypothesis 2B: The consensuality-performance relationship is negative when organizational innovativeness is used as the performance outcome.

Moderating Effects of Environment on Consensuality-Performance Relationships

Researchers generally agree that the environment moderates the consensuality-performance relationship (Bantel & Jackson, 1989; Dess, 1987; Dess & Keats, 1987; Dess & Origer, 1987; Hambrick & Mason, 1984; Hrebiniak & Snow, 1982; Lawrence & Lorsch, 1967; Murray, 1989; O'Reilly

& Flatt, 1986; Priem, 1990). Moderating effects of environmental characteristics are generally recognized and controlled by either research design (studying one industry) (Bantel & Jackson, 1989; Dess, 1987; Dess & Keats, 1987) or statistical analyses (by split sample or use of dummy variables) (Hrebiniak & Snow, 1982; Murray, 1989; O'Reilly & Flatt, 1986). Studies (e.g., Bourgeois, 1980; 1985) that ignore such moderating effects are generally critiqued as inadequate (Dess, 1987).

Environmental Dynamism

Current literatures have identified dynamism, complexity, munificence and competition as dimensions that may moderate the consensuality-performance relationship (Dess & Origer, 1987; Hrebiniak & Snow, 1982; Murray, 1989). Environmental complexity and dynamism are related to environmental uncertainty (Duncan, 1972; Downey, Hellriegel & Slocum, 1975). Munificence and competition are built upon the concept of organizational slack (Bourgeois, 1981). While the uncertainty argument rests on the informational aspect of environment, the slack argument focuses on the resources available to organizations (Aldrich & Mindlin, 1978).

While all these dimensions are useful for the study of consensuality, this dissertation examines only environmental dynamism for two reasons. First, grounded in a social cognitive perspective, this dissertation is interested primarily in the information processing of organization members. The interaction between environmental changes and schema sharedness of organization members emerges as theoretically important, especially in the process of learning and unlearning (Hedberg, 1981; Weick, 1979a). Second,

current studies have illustrated and identified environmental dynamism as the most important dimension moderating the consensuality-performance relationship (Bourgeois, 1985; Dess, 1987; Dess & Keats, 1987; Hambrick & Mason, 1984; Lawrence & Lorsch, 1967; Murray, 1989; O'Reilly & Flatt, 1986; Priem, 1990). Environmental dynamism therefore should be examined for the sake of both its theoretical importance and empirical replication. The importance of environmental dynamism in the study of the consensuality-performance relationship can be illustrated in the following studies.

Dess and associates (Dess, 1987; Dess & Keats, 1987) sampled firms in the paint and allied products industry, and found a positive relationship between consensus and performance. They attributed the positive relationship to low industry munificence. However, as noted by Priem (1990), dynamism should be a more accurate explanation. As a matter of fact, the paint and allied products industry, according to Dess and Beard's (1984) study of 52 industries, ranked 20th on munificence, but 52nd (last) on dynamism. The highly stable environment of the industry may partly contribute to the positive consensus-performance relationship, in comparison with the negative relationship identified by Bourgeois (1980, 1985). More direct examination on the moderating effect of environmental dynamism seems in order to help explain the different consensuality-performance relationships.

Murray (1989) similarly identified a positive relationship between group heterogeneity and long-term performance in an unstable industry (oil industry), whereas no relationship was found in a stable industry (food industry). Similarly, Lawrence and Lorsch (1967) found that in unstable industries, functional differentiation is required for high organizational

performance. Organizations that are more differentiated (in terms of cognitive and emotional orientations) perform better than those that are less differentiated when the environment is unstable. Though some empirical studies do not support the hypothesized role of dynamism in moderating the consensuality-performance relationship (O'Reilly & Flatt, 1986), the importance of environmental dynamism as a moderator is generally recognized.

Moderating Processes of Environmental Dynamism

While the importance of environmental dynamism in the study of the consensuality-performance relationship is recognized, researchers seldom explicate the processes and mechanisms through which it moderates the relationship. This dissertation suggests that environmental dynamism moderates the consensuality-performance relationship in three ways.

First, environment moderates the consensuality-performance relationship by posing different kinds of organizational problems. When the environment is unstable and changing, organization members may need to handle many problems that are novel and ill-defined. When the environment is stable, most of the problems organization members face are structured and routine. To be effective, organizations may require different degrees of cognitive consensuality in different environments.

In their study of group heterogeneity and performance, Filley, House and Kerr (1976) concluded that routine problem solving is best handled by a homogeneous group, and that ill-defined, novel problem solving is best handled by a heterogeneous group in which diversity of opinion, knowledge, and background allows a thorough airing of alternatives. Based upon these observations, Hambrick and Mason (1984) proposed that

In stable environments, team homogeneity will be positively associated with profitability. In turbulent, especially discontinuous, environments, team heterogeneity will be positively associated with profitability (p.203).

Extending these findings to the study of consensuality-performance relationship, similar hypotheses can be made. Cognitive consensuality may positively be associated with performance in stable environments and negatively associated with performance in turbulent environments.

Second, environment may dictate how much change organizations have to make in order to be adaptive. In a stable environment, organizations may operate in the same manner effectively for a long time. The schemas that are shared by organization members and that are developed over time may be valid and accurate. However, in an unstable and changing environment, the schemas that are shared and developed based on previous experiences may hinder organizational adaptation. As schemas that are widely shared are generally believed to be true, organization members may be slower and have more difficulty in making required changes. Hence, in a stable environment, cognitive consensuality may be positively associated with organizational performance because schemas that are shared may be valid and accurate. In an unstable and changing environment, cognitive consensuality may be negatively associated with organizational performance because the schemas that are shared are likely to be outdated and hinder organizational change.

Third, environment moderates the consensuality-performance relationship through the degree of accuracy in environmental perception. When the environment is stable, organization members have more time to test and learn the environment. Hence, their environmental perception is

more likely to be accurate. However, when the environment is unstable and unpredictable, the environmental perception of organization members is more likely to be inaccurate. Given the fact that accuracy in environmental perception is found to affect organizational performance (Bourgeois, 1985; Dess & Keats, 1987), the following hypotheses can be derived. In a stable environment, cognitive consensuality should be positively associated with organizational performance because the environmental perception of organization members is more likely to be accurate. In an unstable environment, cognitive consensuality should be negatively associated with organizational performance because the environmental perception of organization members is more likely to be inaccurate.

Choice of Environmental Measures

As research indicates that objective and perceived environmental measures differ (Tosi et al., 1973; Downey, et al., 1975), the choice of environmental measures becomes an important issue in examining the moderating effects of environment. Current empirical studies employ different environmental measures. Hrebiniak and Snow (1982) and O'Reilly and Flatt (1986) defined environment based on experts' perceptions. Murray (1989) operationalized environment according to the reported coverage of an industry in the New York Times and Wall Street Journal. Supposedly, the reported coverage in these newspapers may influence the environmental perception of managers. Bourgeois (1985) and Dess and Keats (1987) examined environment in terms of both perceived and objective measures.

However, derived from the three moderating processes reviewed earlier, this dissertation uses an objective measure of environmental

dynamism, instead of a perceived measure of environmental dynamism, as the moderator. An objective measure of environmental dynamism is more appropriate because these three arguments-namely the nature of problem solving, the degree of organizational adaptation, and the accuracy of environmental perception-have all assumed the existence of an objective environment that imposes constraints on organizational processes. Objective environmental dynamism affects the nature of problems faced by an organization, the degree of change required by the organization for high performance, and the ability of organization members to perceive the environment accurately. Nevertheless, supplementary analyses on the moderating effects of perceived environmental dynamism are conducted for the sake of completeness³.

Based on the literatures reviewed in this section, the following hypotheses about the moderating effects of environmental dynamism in the consensuality-performance relationship are formulated.

Hypothesis 3: Environmental dynamism moderates the consensuality-performance relationship.

Hypothesis 3A: When the objective environment is stable, cognitive consensuality is positively associated with organizational performance.

Hypothesis 3B: When the objective environment is unstable, cognitive consensuality is negatively associated with organizational performance.

³ Regression analyses based on the moderating effects of perceived environmental predictability have indicated that the consensuality-performance relationships are generally weak in environments of both high and low predictability.

Domains of Cognitive Consensuality

Curvilinear consensuality-performance relationships, performance outcomes, and environmental moderating effects are the three issues that have been discussed as confounding the research findings of consensuality-performance relationships. Two other issues that are relevant but seldom examined empirically in current literatures are domains of cognitive consensuality and scope of cognitive consensuality. In this and the next section, the effects of these two issues in the study of the consensuality-performance relationship are reviewed.

As individual schemas are domain specific (Lord & Foti, 1986), the schemas shared by organization members should also be investigated with reference to specific domains. Accordingly, the study of cognitive consensuality (i.e., the extent to which schemas are shared) should also be domain specific. Our research question, then, is whether cognitive consensualities in different domains have different effects on organizational performance. Is consensuality on one domain (e.g., strategy) equally important to another domain (e.g., culture) in influencing organizational performance? Also, what are the interactions among consensualities on different domains?

In this dissertation, consensualities in three organizational domains-strategy, culture and vision-are examined. These three domains were chosen for two reasons. First, consensualities in these domains are argued or assumed to have important effects on organizational performance (Bennis & Nanus, 1985; Bourgeois, 1980; Dess, 1987; Schein, 1985; Tichy & Devanna, 1986). Second, sharedness is often assumed in these three organizational domains. Moreover, strategy, culture and vision address

three important aspects of organizational processes: "know-how" (how we can do better than others), "know-what" (what we believe more fervently than others), and "know-why" (why we do it this way) (Bennis and Nanus, 1985; Weick, 1985a). In the following paragraphs, consensualities on these domains are reviewed.

Consensuality on Strategy

Most empirical studies related to the consensuality-performance relationship examine consensus on strategy-related aspects of organizations (Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982). In this dissertation, strategy refers to a coherent set of tactics or decisions that provide organizations unique advantages in competition (Porter, 1980). Though infrequently discussed, consensus on strategy is often assumed in both the rational-comprehensive approach (Andrews, 1971; Hofer, 1975; Porter, 1980) and the political-incremental approach (Braybrooke and Lindblom, 1970; Quinn, 1978) in the strategic management literature (Bourgeois, 1980). The importance of consensus-building was also noted by Dess and Origer (1987).

Often, strategic formulation is viewed as a consensus-building process and many have stressed the importance of consensus in strategic decision making (Hrebiniak & Joyce, 1984; Nielson, 1981; Steiner, 1979) (p.313).

The empirical relationships between consensuality on strategy and organizational performance are examined in numerous studies (Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982). While some studies have directly examined consensus on organizational objectives and competitive methods (Bourgeois, 1980; Dess, 1987), others

have investigated consensus on related aspects of strategic decision-making (e.g., environment, organizational strengths and weaknesses). Though the consensus-performance relationship is hypothesized to be positive in these studies, conflicting findings are found. Nevertheless, these studies have illustrated 1) the importance of studying the relationship between consensuality on strategy and performance, and 2) the need for additional research in this domain.

The importance of consensus (or consensuality, from a social cognitive perspective) in the strategic management literature has been increasingly and explicitly recognized in the last decade (Brodwin & Bourgeois, 1984; Chaffee, 1985; Hart, 1989; Mintzberg & Waters, 1985; Nonaka, 1988; Shrivastava & Grant, 1985). Many researchers have identified consensus and cognitive sharing as one of the major modes or models of strategy formulation and implementation. Models and modes of strategic planning such as the "collaborative model", "cultural model" (Brodwin & Bourgeois, 1984), "systematic bureaucracy model" (Shrivastava & Grant, 1985), "interpretive mode" (Chaffee, 1985), "compressive management" (Nonaka, 1988), "ideological mode", "consensus mode" (Mintzberg and Waters, 1985), and "symbolic mode" (Hart, 1989) continue to appear in the strategic management literature. Clearly, cognitive consensuality is increasingly an important and relevant construct in the study of strategy.

Consensuality on Culture

Culture refers to the assumptions, beliefs, and values that are shared among organization members and that affect the perception, thinking, feeling, and interpretation of members in dealing with organizational

problems (Schein, 1985). Though not examined on its own, cognitive sharing (e.g., shared beliefs, values, assumptions, understandings, standards, etc.) is often assumed in the study of culture (Deal & Kennedy, 1982; Goodenough, 1981; Ouchi, 1981; Pascale & Athos, 1981; Peters & Waterman, 1982; Schein, 1985)⁴.

Investigation of consensuality on culture is important as it reflects the extent to which interpretation of organizational events is shared, organizational values and philosophies are committed, and behavioral control is implicitly imposed. Cameron and Freeman (1991) conceptualized consensuality on culture as cultural strength whereas Louis (1985) called it psychological penetration.

Goodenough (1981) argued that cultures, like languages, must be shared in order to communicate. "Cultures" that are not shared remain idiosyncratic thinking. Once shared, cultures provide standards for deciding "what is, what can be, how one feels about it, what to do about it, and how to go about doing it" (Goodenough, 1981, p.62). Schein (1985) likewise asserted that sharedness is a central aspect of organizational culture because it provides a basis for the social definition of organizational reality.

In fact, the bulk of the content of a given culture will concern itself primarily with those areas of life where objective verification is not possible and where, therefore, a social definition becomes the only sound basis for judgement (Schein, 1985, p.90-91).

In a broad sense, culture and strategy, once shared, serve similar functions as they both provide contexts for organizational interpretation and

⁴ It is recognized that different schools of thought exist in the study of culture (refer to Allaire & Firsirotu, 1984; Smircich, 1983). Cognitive sharing is emphasized in some schools while other forms of sharing (e.g., symbols) are emphasized in other schools.

action. In a concluding chapter of a book about organizational culture, Weick (Frost, et al., 1985) observed that:

The unity found in the preceding chapters lies less in the fact that all of them are about culture than in the fact that all of them are about meaning. These chapters could just as well have been about strategy, because both concepts describe ways in which people understand what is happening. Both strategy and culture contain premises, axioms, and first principles that define the nature of appropriate action (Weick, 1985a, p.388).

However, Weick (1985a) aptly described possible differences in performance consequences between organizations developed from shared strategies and those developed from shared cultures:

Shared strategies usually consist of agreements on means (here's what we can do better than others), whereas shared cultures consist of agreement on ends (here's what we believe more fervently than others). Each form of sharing can represent a fundamentally different starting point for new organizations, with different implications for adaptation and adaptability (Weick, 1985a, p.383).

While consensualities on strategy and culture may serve similar functions in some organizational processes, they may result in different performance outcomes (Weick, 1985a). The empirical question is whether consensualities on strategy and culture have similar relationships to organizational performance. Are their effects on organizational performance substitutive or supplementary? These are questions to be addressed.

Consensuality on Credibility of Business Vision

Business vision refers to the scenario, the superordinate goal, or the dream that channels the energy and efforts of organization members toward common ends in the future. As noted by Tichy and Devanna (1986),

The vision is the ideal to strive for. It releases the energy needed to motivate the organization to action. It provides an overarching framework to guide day-by-day decisions and priorities and provides the parameters for planful opportunism (Tichy & Devanna, 1986, p.126).

Business vision is motivating because it provides both the challenge to strive for and the conceptual road map that links current reality to future dream (Tichy & Devanna, 1986, p.128). It consists of both emotional and rational components.

However, a business vision has its motivating and appealing impact on organization members only if it is seen as credible (Bennis & Nanus, 1985; Levinson & Rosenthal, 1984; Tichy & Devanna, 1986). Organization members must believe that 1) the vision is realistic and possible, 2) the top management is sincere to the vision (not just a slogan), and 3) other members also believe in the credibility of the vision. Credibility of a business vision cannot be developed just by communication, but, more important, by action (Westley and Mintzberg, 1989). Top management must demonstrate their commitment to the vision through consistency in their decisions and actions (Peters, 1978). Through "staying the course, leadership establishes trust" (Bennis & Nanus, 1985, p.46).

Research on the relationship between consensuality on credibility of vision and organizational performance is lacking. The relationship, however, believes to exist. In order to have a major impact on organizational performance, a vision must be perceived as credible not just by an organization member himself, but also by how he thinks others are thinking. A business vision, or a corporate dream to strive for, can only be realized if only a few individuals are committed to its causes. Therefore, if consensuality of organization members on the credibility of business vision is low, i.e. members interpret the credibility of vision differently, its impact on

organizational performance should be marginal (or even negative). If consensuality of organization members on the credibility of business vision is high, its impact on organizational performance should be positive, provided that organizational members generally perceive the business vision as credible⁵.

In this dissertation, the relationships between organizational performance and consensualities on these three domains are examined. Due to the conflicting findings reported in studies related to the domain of strategy and the lack of empirical research in the domains of culture and credibility of business vision, a positive consensuality-performance relationship (consistent with the general assumption in most literature) is tentatively hypothesized in all three domains.

Hypothesis 4: Consensualities on strategy, culture and credibility of business vision enhance organizational performance.

Hypothesis 4A: Consensuality on strategy is positively associated with organizational performance.

Hypothesis 4B: Consensuality on culture is positively associated with organizational performance.

Hypothesis 4C: Consensuality on credibility of business vision is positively associated with organizational performance.

Scope of Cognitive Consensuality

Wooldridge and Floyd (1989) recently asserted that the scope of consensus is one of the issues that deserves more attention in the study of

⁵ All consensuality measures were weighted in this dissertation (see Appendix D). Hence, a high score on a weighted consensuality measure of business vision means that members have high consensuality on its credibility and perceive the vision as credible.

the consensus-performance relationship. "Scope refers to who participates in consensus" (Wooldridge & Floyd, 1989, p.296). Extending their logic to this study, scope of cognitive consensuality refers to the appropriate units of analysis in the study of the consensuality-performance relationship.

Louis (1985) has suggested four loci where cultures or sub-cultures may develop: among top management, along a horizontal slice (e.g., hierarchical level), along a vertical slice (e.g., division), and within a subunit (e.g., department). Due to the similarity of processes involved in the development of culture and cognitive consensuality, Louis's suggestion is relevant to this dissertation. Top management, functional departments, hierarchical levels, and the organization as a whole are possible sites for studying consensuality.

However, to simplify the analysis and to maximize the contrast, consensualities among top management and among organization members as a whole are used as two contrasting models: the TMT model and the organizational model. These two models are chosen because while the strategic management literature suggests that consensuality among top management is important, literatures in culture⁶ and especially business vision imply that consensuality throughout an organization is more important. By examining consensuality of different scopes, insights into the appropriate units of analysis can be drawn (Wooldridge & Floyd, 1989).

Almost all empirical studies reviewed in this chapter assume the appropriateness of the TMT model in studying consensuality and related topics (Bantel & Jackson, 1989; Bourgeois, 1980; 1985; Dess, 1987; Dess &

⁶ Researchers have different assumptions on the existence of a unitary culture (Peters & Waterman, 1982) or pluralistic cultures (Gregory, 1983) within organizations.

Keats, 1987; Hrebiniak & Snow, 1982; Murray, 1989; O'Reilly & Flatt, 1986). By examining the consensuality of TMT, these studies make two implicit assumptions. First, TMT (not the CEO alone, nor other stakeholders) has substantial impact on organizational performance (Hambrick & Mason, 1984). As Hambrick (1987, p.88) explained, "This view contends that performance of an organization is ultimately a reflection of its top managers." Second, TMT has substantial control over the directions and processes within organizations. In other words, organizational processes and strategies are characterized by the deliberate actions of top management (Hart, 1989; Mintzberg & Waters, 1985; Nonaka, 1988). In organization theory, the TMT model corresponds to the concept of dominant coalition (Cyert & March, 1963; Thompson, 1967).

Unlike the TMT model, the organizational model is built upon different assumptions. First, it assumes that TMT alone is incapable of affecting organizational performance (Bennis & Nanus, 1985). Involvement and empowerment of organization members at lower levels are required (Bennis & Nanus, 1985; Block, 1988). Second, the implementation of organizational plans or strategies depends more on the interpretation, initiation, and coordination of other organization members than those of top management (Bresser & Bishop, 1983; Nonaka, 1988; Ouchi, 1981; Pascale & Athos, 1981; Peters & Waterman, 1982). Consensuality of members throughout the organization, however, is seldom empirically examined. No study has formally compared the effects of the TMT model and organizational model in the study of the consensuality-performance relationship.

This dissertation compares the relative importance of the TMT and organizational models in the consensuality-performance relationship. As

most empirical studies assume the importance of the TMT model, the consensuality-performance relationship is hypothesized to be stronger in the TMT model than in the organizational model.

In addition, the interaction between the scope and the domains of consensuality in affecting organizational performance is investigated. Consensuality on strategy is hypothesized to have stronger effects on performance in the TMT model. As argued by Bourgeois (1985, p.548), "strategic management is the province of organizational elites, and the way in which the members of these elites-senior executives-perceive and act upon their firms' external environments plays a large role in corporate conduct and performance". However, consensualities on culture and vision are hypothesized to have stronger effects on performance in the organizational model. Although culture and vision are greatly influenced by the top management, their effectiveness depends on their being shared by members beyond the TMT. Ouchi's (1981) implicit control argument and Bennis and Nanus's (1985) empowerment argument have both illustrated the importance of shared culture and vision among organization members (not just members of TMT). Based on these arguments, the following hypotheses are developed for empirical study.

Hypothesis 5: The strength of the consensuality-performance relationship is affected by the scope of consensuality and the interaction between the scope and domains of consensuality.

Hypothesis 5A: The relationship between performance and consensuality is stronger in the TMT model than in the organizational model.

Hypothesis 5B: The relationship between performance and consensuality on strategy is stronger in the TMT model than in the organizational model.

Hypothesis 5C: The relationship between performance and consensuality on culture is stronger in the organizational model than in the TMT model.

Hypothesis 5D: The relationship between performance and consensuality on vision is stronger in the organizational model than in the TMT model.

On Causality

The theory of the consensuality-performance relationship generally states that organizational outcomes can be partially predicted from the cognitive consensuality of organization members. However, researchers can also argue that cognitive consensuality of organization members can be partially predicted from previous organizational outcomes (Bourgeois, 1980; Dess, 1987).

Using the construct of organizational slack, Bourgeois (1980) and Dess (1987) argued that "success breeds slack, which in turn gives the firm enough maneuvering space to allow conflict avoidance through multiple goal satisfaction" (Bourgeois, 1980, p.244). Slack also allows the experimentation of new strategies (Bourgeois, 1981). Hence, previous organizational performance affects current organizational slack. In turn, organizational slack influences the maneuvering space of organization members. When organizational slack is low, an organization is running a tight ship. Concentration and conservation of resources are crucial for organizational success and survival. Cognitive diversity among TMT and organization members are suppressed. However, when organizational slack is high, members of the TMT or organization may have more resources to think and act differently. A higher degree of cognitive diversity is allowed.

Another theoretical argument for how performance affects consensuality is grounded in organizational learning theory (Hedberg, 1981;

March & Olsen, 1976). Organizations that did well in the past may reinforce specific strategies, cultures or visions and reduce dissensus among organization members regarding the way organizations should organize (Bourgeois, 1980; Dess, 1987). Although such learning may involve superstitious learning (Hedberg, 1981; March & Olsen, 1976), cognitive consensuality is still enhanced. Alternatively, low performance may lead to diverse thinking about how organizations should compete.

Notwithstanding these theoretical arguments, this dissertation continues to argue that cognitive consensuality has effects on organizational outcomes, although it recognizes the plausibility of alternative explanations. Such a theoretical position is partially supported by Hrebiniak and Snow's (1982, p.1149) finding that consensus has a significant and positive correlation with performance, even after controlling for organizational performance in the two years prior to the focal year.

As this dissertation is based on cross-sectional data, the exact causal relationship can never be examined. Hence, the causal relationship (consensuality --> performance) implied in this dissertation is theoretically guided rather than empirically inferred.

An Integrative Model

In this chapter, five research issues that may contribute to the current controversies of the consensuality-performance relationships were reviewed and specified: curvilinearity, types of performance outcomes, environmental moderator, domains of consensuality, and scope of consensuality. Hypotheses were formulated at the end of each discussion for empirical testing. For quick reference, Table 3.3 lists the research hypotheses of the dissertation.

Table 3.3

Summary of the Five Research Hypotheses

Hypothesis 1: Consensuality-Performance relationships are curvilinear

H1A: The consensuality-performance relationship deviates significantly from linearity

H1B: Consensuality-performance relationship is positive when consensuality is low

H1C: Consensuality-performance relationship is negative when consensuality is high

Hypothesis 2: Consensuality-performance relationships vary with performance outcomes

H2A: The consensuality-performance relationship is positive when organizational competitiveness is the performance outcome.

H2B: The consensuality-performance relationship is negative when organizational innovativeness is the performance outcome.

Hypothesis 3: Environmental dynamism moderates the consensuality-performance relationship

H3A: The consensuality-performance relationship is positive when the objective environment is stable

H3B: The consensuality-performance relationship is negative when the objective environment is unstable

Hypothesis 4: Consensualities on strategy, culture and credibility of business vision enhance organizational performance

H4A: The relationship between consensuality on strategy and performance is positive

H4B: The relationship between consensuality on culture and performance is positive

H4C: The relationship between consensuality on the credibility of vision and performance is positive

Hypothesis 5: The strength of the consensuality-performance relationship is affected by the scope of consensuality and the interaction between the scope and the domains of consensuality

H5A: The relationship between performance and consensuality is stronger in the TMT model than in the organizational model.

H5B: The relationship between performance and consensuality on strategy is stronger in the TMT model than in the organizational model

H5C: The relationship between performance and consensuality on culture is stronger in the organizational model than in the TMT model

H5D: The relationship between performance and consensuality on vision is stronger in the organizational model than in the TMT model

In this section, these five research issues are integrated into a model. Figure 3.2 portrays the hypothetical models. Two integrative models based, respectively, on the TMT model and the organizational model are summarized in Figure 3.2. Straight lines with an arc in the middle denote both linear and curvilinear relationships. Thickness of lines reflects the strength of causal relationships.

Figure 3.2

Hypothetical Models of the Consensuality-Performance Relationship

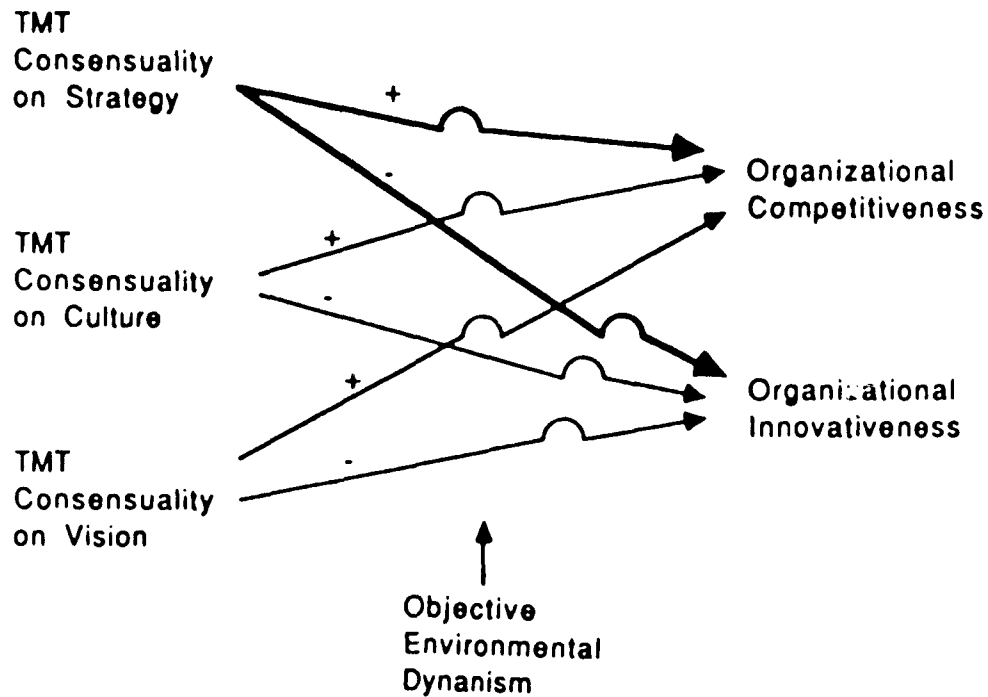
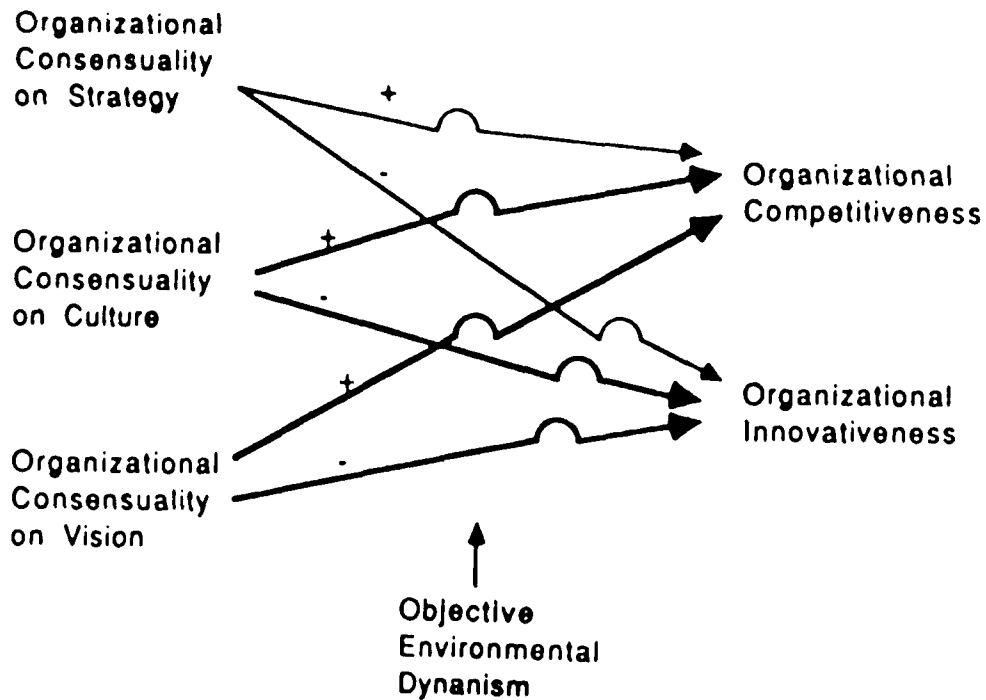
A. TMT Model

Figure 3.2

Hypothetical Models of the Consensuality-Performance Relationship (Cont.)

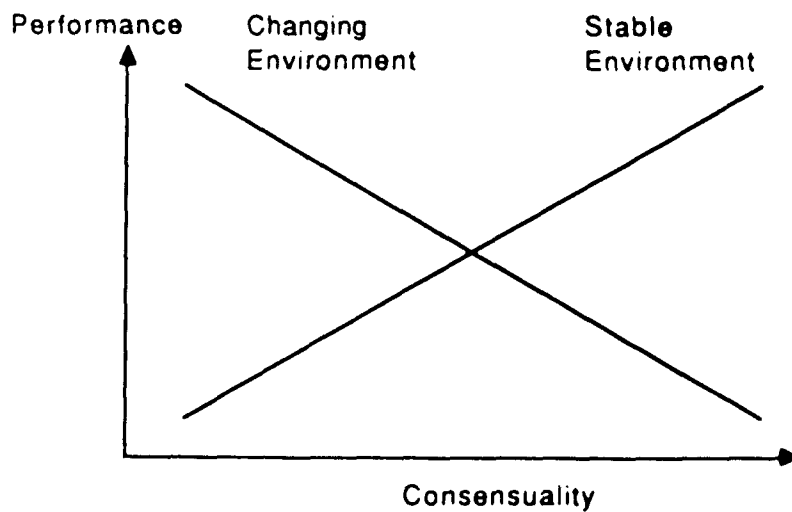
B. Organizational Model

Consensuality is hypothesized to positively affect competitiveness and negatively affect innovativeness. Consensuality is also hypothesized to have curvilinear relationships with both performance outcomes. In addition, objective environmental dynamism moderates the consensuality-performance relationship. Depending on the linearity or curvilinearity of the consensuality-performance relationship, the moderating effects of environmental dynamism are different.

If the consensuality-performance relationship is linear, the relationship is hypothesized to be negative in a highly changing environment and positive in a stable environment. Figure 3.3 illustrates such an interaction.

Figure 3.3

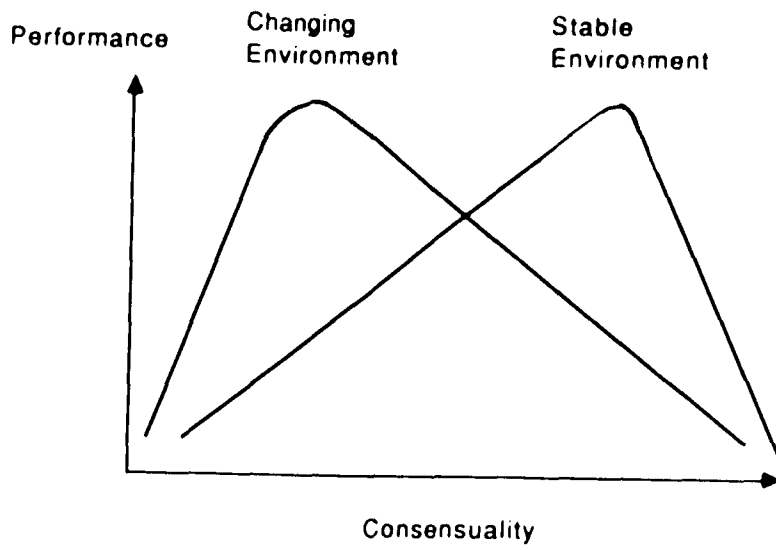
Linear Consensuality-Performance Relationship
Moderated by Environmental Dynamism



If curvilinearity exists, environmental dynamism moderates the relationship as represented by the skewness of the curve. In a changing environment, the curve is hypothesized to skew negatively. In a stable environment, the curve is hypothesized to skew positively. Figure 3.4 illustrates such an interaction.

Figure 3.4

Curvilinear Consensuality-Performance Relationship
Moderated by Environmental Dynamism



CHAPTER 4

RESEARCH METHODOLOGY

This chapter describes the sampling procedure, the sample, the measures, and the statistical analyses used to assess the research hypotheses. Rationales for choosing the design and measures are also discussed.

To provide a systematic assessment of the five hypotheses formulated in Chapter 3, data should be collected from multiple respondents at different organizational levels, and in diverse business environments. Consensuality of organization members of different scopes (TMT model vs. organizational model) and in different environments can then be assessed. Questions covering multiple organizational domains and multiple performance measures should be asked.

The "Human Resource (HR) Competencies of the 1990's" research project¹ has provided data that meet these requirements (Ulrich, Brockbank & Yeung, 1989; Ulrich, Brockbank & Yeung, 1990; Ulrich, Yeung & Brockbank, 1990; Yeung, Brockbank & Ulrich, 1991). Conducted in 1988, the research project has developed one of the largest and most comprehensive databases of its kind in the United States. Though originally designed to study the human resource issues of leading firms in the U.S., the database also furnished information on the strategy, culture, vision, environment, and performance of businesses. Moreover, these data were

¹ Dave Ulrich was the project director and Arthur Yeung the project manager of the study. Other research team members included Wayne Brockbank, Dale Lake, Noel Tichy, and Joe White.

collected from multiple respondents at multiple organizational levels. Hence, the availability of these data provided an opportunity to address a number of important research questions on the consensuality-performance relationship more comprehensively than they have been addressed in the past.

Sampling Procedure

Sample Identification²

As one of the purposes of the "Human Resource Competencies of the 1990's" research project was to understand the HR practices and competencies of leading American firms, all major U.S. firms were identified as the population for investigation. Targeted firms for sampling were identified through three major sources of information: 1) firms listed as the most admired companies in 33 industries by Fortune magazine in 1988 (Fortune, 1988); 2) the 50 largest U.S. firms (in terms of employment figures) listed in Human Resource Executive in 1988 (Human Resource Executive, 1988); and 3) firms with which research team members had research or consulting contacts. A total of about 250 firms in diverse industries were selected. These firms represented some of the largest firms in the United States. Clearly, these firms were not a random sample of U.S. firms.

² The word "sample" is used loosely in this dissertation. It does not denote a random sample, nor does it imply representativeness. Sample in this dissertation refers to the businesses from which data were collected.

Invitation for Participation

Once the firms were selected, the names and addresses of senior human resource officers of these firms were identified, using the Standard and Poor's Registrar of Corporations, Directors and Executives (1988) and the mailing lists of research team members. Letters of invitation were sent to a senior HR executive at each of the targeted firms. About 100 firms showed interest in participating in the research project and, in the end, 91 firms actually participated. Participation meant that the senior HR executive identified from 5 to 50 HR professionals (known as Participants) working at different organizational levels as respondents. These HR Participants worked in different businesses (corporate office, group, division, plant facility) of the firm. Approximately 2,100 HR Participants were identified in the 91 firms.

Data Collection

Each of these 2,100 HR Participants received a packet of 10 surveys together with a cover letter from the senior HR executive of the firm and a cover letter from the University of Michigan research team. The cover letters described the purposes of the project and urged the Participants to participate in the study. Of the ten surveys, one survey (Participant survey) was to be completed by the Participant. Nine surveys were to be distributed to Associates (supervisor, peer, subordinate, or client³ of Participant) who had working relationships with the Participant. Questions

³ Clients refer to non-HR colleagues that working in the same business, e.g., people in production. They are clients of HR professionals because HR professionals provide services to them.

on the survey referred to the "Participant's business" (the business in which the HR Participant provided services) as the frame of reference. The name of this business was written by the Participant on the front page of each Associate survey.

In total, 10,400 surveys were returned, including 1,400 surveys from HR Participants and 8,985 surveys from Associates. These respondents worked in 1,200 businesses in 91 firms. Firms that participated in the study are listed in Appendix A. The response rate of the research project was about 70%⁴. The whole process of data collection was conducted in 1988 and lasted for about 9 months.

Description of Sample

Unit of Analysis

The basic unit of analysis for this study was the "business." Businesses were defined as the organizational units in which the HR Participants provided services. Businesses were identifiable units that were commonly understood within each firm. Businesses could be corporate offices, groups, divisions, or plant facilities.

⁴ This response rate is calculated by identifying the total number of surveys distributed (2100 Participants x 10 surveys each = 21,000), then subtracting those surveys where we received no response for a Participant (the Participant did not complete his/her survey or distribute to anyone else). This represented about 250 Participants. Finally, by contacting a random sample of 50 Participants who responded to the survey, we found that an average of 7 Associate surveys were distributed by each Participant. This means that approximately 14,800 surveys were actually distributed either to Participants or Associates. The 10,400 response rate is about 70% of these 15,000. We note that this response rate is exceptional for this type of survey research, partly due, we believe, to the salience of the research topic and the commitment of each firm to solicit responses.

In this dissertation, businesses are not equivalent to strategic business units (SBUs) as used in the strategic management literature. The term "business" in this dissertation is used in a more generic sense. Instead of referring to units at a specific organizational hierarchy (below corporate office, group, or division for most SBUs), it refers to any units along the hierarchy that are functionally, hierarchically, or geographically distinct within firms. Businesses are used instead of SBUs for two reasons. First, businesses meet the criteria of the loci of consensuality better than SBUs. Extended from Louis's (1985, p.79) argument on the loci of culture, cognitive consensuality can develop in any setting that imposes structural interdependencies among members, provides opportunities for affiliation, and constitutes a constellation of interest or purposes. In this sense, SBUs represent one of these settings, but not the only one. On the other hand, businesses, as defined in this dissertation, seem to provide a more comprehensive unit of analysis. Second, from an empirical point of view, businesses also represent the organizational units about which respondents have more immediate knowledge and concrete perceptions. Respondents were asked questions related to the units in which they were directly working. More reliable data can thus be collected.

The primary weakness of using businesses instead of SBUs is lower conceptual clarity. First, it seems that SBUs are more clearly defined and refer to organizational units that are more comparable. However, the concern seems more to be a matter of degree than absolute comparability because the definition of SBU varies from one firm to another. Second, businesses at higher hierarchical levels of the organization (e.g., corporate offices) may handle more than one product or service and hence develop multiple strategies, cultures, or visions. In these businesses, the study of

cognitive consensuality is problematic. Due to the multiple frames of reference in strategies, cultures, and visions, researchers cannot really know what low consensuality means. It may mean low consensuality among organization members or high consensuality among organization members around different strategies, cultures, or visions. To minimize this problem, corporate-level businesses competing in multiple products or services should be excluded.

In total, 1,400 HR Participants and 8,985 Associates provided information on 1,200 businesses. Their individual data were aggregated together to form measures at the business level. Appendix B reports the functional and hierarchical distribution of these respondents. Human resource professionals constitute the largest functional group in the database (about 51%) due to the primary purpose of the research project.

Screening of Data

Not all data collected in the "Human Resource Competencies of the 1990's" research project were used for the analyses in this dissertation. Three precautions were taken to make the database more appropriate for the study of consensuality-performance relationship. First, only businesses producing one dominant product (as defined by two-digit SIC codes) were retained for the study of the consensuality-performance relationship. As explained earlier, it is problematic to study consensuality in businesses with diverse product-market portfolios. Thus, those businesses at the corporate level and producing a range of diversified products (e.g., the corporate office of 3M) were excluded from most of the analyses. However, these corporate-

level businesses are included in the validation of perceived performance measures with objective performance measures in one analysis.

Second, as HR professionals are over-represented in the sample due to the primary purpose of the study, a random 20% sample of the responding HR professionals was drawn to include in the data to be used in this dissertation. The primary purpose of this design is to balance the representation of respondents from different functional specialities. As a result, the functional representation of respondents in the new database is much more balanced. As reported in Appendix C, HR professionals and general management constitute 22% and 20%, respectively, of the new database.

Third, following the suggestion of Bourgeois (1985, p.554), only businesses with at least three respondents were retained for the study of consensuality⁵. This is to ensure that the computation of consensuality measures within a business is based on a reasonable number of respondents.

As a result of these screening processes, 760 businesses were retained for the study of organizational consensuality in this dissertation. The number of respondents in these businesses ranged from 3 to 33, with an average of 5.7. For the study of TMT consensuality, only 119 businesses had more than three respondents from the top management teams. The number of TMT respondents in these businesses ranged from 3 to 26, with an average of 4.1.

⁵ The criterion of using 3 respondents is arbitrary. However, it is considered as more appropriate than using responses from 1 or 2 respondents within each business.

Characteristics of Businesses

Table 4.1 to Table 4.3 report the distribution of the businesses by size, age and industry respectively.

Table 4.1 indicates that the businesses were distributed across different categories of sizes, ranging from less than 1000 to over 12,000. Businesses with fewer than 1,000 employees and over 12,000 employees were the largest groups, accounting for 30% and 27%, respectively. On the whole, the sample was skewed toward large businesses, reflecting the original population bias.

Table 4.1
Distribution of Businesses by Size

No. of Employees	No. of Businesses	Percent
1 - 1000	218	30%
1001 - 2000	100	14%
2001 - 3000	43	6%
3001 - 4000	36	5%
4001 - 5000	24	3%
5001 - 6000	27	4%
6001 - 7000	16	2%
7001 - 8000	14	2%
8001 - 9000	12	2%
9001 - 10000	12	2%
10001 - 12000	19	3%
over 12000	197	27%
Missing Information	42	
Total	760	100%

Table 4.2 summarizes the age distribution of businesses in the study. The businesses were fairly distributed across different organizational ages,

ranging from less than 10 years to over 150 years. Businesses less than 10 years old and between 101 and 150 years old represented the largest groups in the sample, constituting 12% and 13%, respectively.

Table 4.2
Distribution of Businesses by Years of Establishment

Years of Establishment	No. of Businesses	Percent
Less than 10 years	86	12%
11 - 20 years	74	10%
21 - 30 years	68	10%
31 - 40 years	81	11%
41 - 50 years	39	6%
51 - 60 years	49	7%
61 - 70 years	67	10%
71 - 80 years	32	5%
81 - 90 years	63	9%
91 -100 years	28	4%
101-150 years	91	13%
over 150 years	24	3%
Missing Information	58	
Total	760	100%

Table 4.3 reports the distribution of the businesses in 15 broad categories of industries (as defined by 2-digit SIC code). Following the SIC system adopted by the Standard and Poor's Compustat, businesses in the following industries constituted more than 10% of the sample: chemicals/ pharmaceuticals industry (SIC = 28) and computer and related products industry (SIC = 36). Businesses in other industries ranged from 4% to 9% of the sample.

Table 4.3
Distribution of Businesses by Industries

Industries	No. of Businesses	Percent
Chemicals/Pharmaceuticals	99	13%
Computers & Related Products	83	11%
Electrical Machineries/Appliances	26	4%
Finance/Banking	67	9%
High Technology Products	28	4%
Iron and Steel	32	4%
Light Manufacturing	54	7%
Machineries	54	7%
Miscellaneous Manufacturing	37	5%
Non-Metal Materials	27	4%
Petroleum and Gas	60	8%
Services	27	4%
Transportation	67	9%
Utilities	28	4%
Wholesaling/Retailing	44	6%
Missing Information	27	
TOTAL	760	100%

Measures

Four categories of variables are to be operationalized: consensuality measures (independent variables), performance measures (dependent variables), environmental dynamism (moderator), organizational size and age (control variables).

Consensuality Measures

Current literature (Bourgeois, 1980, 1985; Child, 1974; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982) commonly adopts an unweighted consensuality measure, i.e., summing the standard deviations of members' perceptions on individual items, to examine the consensuality-performance relationship. The current derivation of unweighted consensuality measures is, however, found to be inadequate in the study of consensuality-performance relationships. There are two major limitations of the unweighted consensuality measure.

First, the derivation of consensuality measures based on the standard deviations of individual items is inappropriate. Most individual items examined in previous studies appear to be influenced by some underlying factors, and thus the calculation of consensuality measures based on individual items can lead to inappropriate weighting of different factors. Factors that have more individual items included in a study will be weighted more heavily than factors with fewer individual items in the computation of consensuality measures.

Second, the use of unweighted consensuality measure assumes that businesses have equal emphases on all strategies or cultures included in a study. As a result, consensuality on strategy A is assumed to have equal impact on organizational performance as consensuality on strategy B, although the business may focus primarily on strategy A. As consensuality on strategy B (which is not emphasized or implemented) may have little consequence for actual organizational processes, the relationship between consensuality on strategy B and organizational performance is expected to be weak. Hence, the use of unweighted consensuality measures in the study

of consensuality-performance relationships is argued to be inappropriate⁶. Consensuality measures should reflect the actual emphases of businesses on different strategies, cultures, etc. Thus, a weighted consensuality measure is a better measure than an unweighted consensuality measure.

In this dissertation, a weighted consensuality measure was developed to examine the consensuality-performance relationship. Weighted consensuality measures were derived by the multiplication of the standard deviations (consensuality) and the means (emphasis) of each domain factor (strategy, culture, and vision)⁷. The use of standard deviation to operationalize consensuality is conceptually justified because consensuality primarily refers to the "modal clustering" (Goodenough, 1981), the "overlap" (Weick, 1979a), the "homogeneity" (Louis, 1985), and the "variance" (Harris, 1988) of members' cognitions. The use of mean to weigh the consensuality measures is appropriate because it reflects the extent to which a business focuses on individual factors⁸. Appendix D gives more detailed information on how weighted consensuality measures were derived.

In total, six groups of consensuality measures were derived to operationalize consensualities on the three organizational domains

⁶ As members of businesses with high consensuality should have consensual views on what is important and what is not, consensuality on strategy B itself is an appropriate indicator of the construct of consensuality. However, it is not an appropriate measure when used in the study of consensuality-performance relationship.

⁷ As standard deviations and means have different scales, both of them were standardized to develop same scales, with means equal to 5 and variances equal to 1. The standard deviations and means were standardized in order to avoid the inappropriate weighting of one measure vs. another in the development of weighted consensuality measures.

⁸ The emphasis of businesses on individual factors is based on the perceived importance of the individual factor within businesses by the respondents.

(competitive strategies, business cultures, and credibility of business visions) and the two scopes of consensuality (TMT model and organizational model).

Consensuality on Competitive Strategies. Sixteen questions developed from Porter's (1980) generic strategies were asked. By examining how members define and perceive the competitive strategies of their businesses, the cognitive consensuality of members in this domain can be inferred.

The 16 questions included in this study had been empirically demonstrated to measure Porter's model (Dess & Davis, 1984). In this study, factor analyses showed that these questions belonged to three underlying factors: product differentiation ($\alpha = .81$), marketing differentiation ($\alpha = .74$) and cost competitiveness ($\alpha = .72$). These factors closely replicated the generic strategies of Porter (1980). Appendix E lists the detailed questions on competitive strategies.

Consensuality measures for strategy were calculated by the standard deviations of members' perceptions on the three strategy factors multiplied by the extent to which the three strategy factors were perceived to be emphasized in the business. Factor analysis and reliability analysis indicated that the consensuality measures of the three strategy factors should remain separate and could not be scaled into one overall measure (alphas are .47 and .54 for the TMT and organizational consensualities respectively).

Consensuality on Business Cultures. Twelve questions derived from Quinn's typology of business cultures were asked (Quinn & McGrath, 1984). Scenarios about general cultural characteristics, institutional bonding or

coupling, and strategic emphases of organizations were described to stimulate organization members to interpret the relative resemblance of their business cultures to four ideal cultural types: group culture, developmental culture, hierarchical culture, and rational culture (Cameron & Freeman, 1991). Factor analyses confirmed that these questions grouped according to the four cultural types they were supposed to measure. The reliability (alpha) coefficients of the four culture factors were as follows: group culture (.79), developmental culture (.80), hierarchical culture (.76), and rational culture (.77). Appendix F lists the detailed questions regarding business cultures.

Consensuality measures on culture were calculated by the standard deviations of members' perceptions on these four culture factors multiplied by the perceived descriptiveness of these four cultures in the business. The reliability analysis indicated that the consensuality measures on the four culture factors should remain separate (alphas are .16 and .30 for TMT and organizational consensualities respectively).

Consensuality on Credibility of Business Vision. One question, the extent to which "the vision of the business is seen as credible within the business", was used to examine the perceptions of members on the credibility of their business vision⁹. The question was based on the

⁹ In the survey, three questions on the articulation, the sharedness, and the credibility of business vision were asked. The question on the sharedness of business vision was dropped from analysis because it was difficult to interpret the consensuality measure on the sharedness of members on vision. The remaining two measures, the articulation and the credibility of business vision, are highly correlated. To avoid multicollinearity, two options are available: 1) the two measures can be scaled into one overall measure; 2) one of the two measures should be dropped. The second option was chosen because scaling the articulation of business vision (which is related to communication) and the credibility of business vision (which is related to trust) is conceptually like adding apples

emphasis that current literature (Bennis & Nanus, 1985; Tichy & Devanna, 1986; Westley & Mintzberg, 1989) has commonly placed on the credibility of business vision as an important component of business vision.

The question on the credibility of business vision is clearly different from other questions on business strategies and business cultures. While the questions on business strategies and cultures are more content-oriented (specific strategies and cultures), the question on business visions is more attribute-oriented. It measures whether the business vision is trusted by members. What the vision focuses on is not specified. The primary reason for using an attribute-oriented question instead of content-oriented questions is that no well-defined typology of business visions has been developed (compared to available typologies in strategies and cultures). Nevertheless, the use of this question may still reflect the perception of organization members on an essential aspect of business vision.

The consensuality measure on the credibility of business vision was measured by the standard deviation of members' perceptions on the credibility of business vision multiplied by the extent to which the business vision was perceived as credible.

To facilitate interpretation, all consensuality measures in this dissertation were derived in such a way that the larger the values, the higher the weighted consensuality among organization members. (See Appendix D for details.)

Table 4.4 reports the means, standard deviations, skewness, ranges, and intercorrelations of eight TMT consensuality measures (three consensuality measures on strategy, four consensuality measures on culture,

and oranges. Nevertheless, empirically speaking, no major difference between the two options was found on the regression results.

and one consensuality measure on business vision). The skewness of the consensuality measures indicates that the measures were all normally distributed. The intercorrelation matrix shows that correlations among consensuality measures ranged from -.25 to .43. Correlations among consensuality measures were generally moderate, with some exceptions (e.g., the correlation coefficient between consensuality measures on product differentiation strategy and developmental culture was .43). The potential threat of multicollinearity should be examined.

Table 4.4
Descriptive Statistics and Intercorrelation of TMT Consensuality Measures

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Consensuality Measures on Strategy:								
Product Diff. (1)	1.00							
Marketing Diff. (2)	.38***	1.00						
Cost Compet. (3)	.13	.18*	1.00					
Consensuality Measures on Culture:								
Group (4)	.24**	.30***	.03	1.00				
Developmental (5)	.43***	.19*	-.06	.37***	1.00			
Hierarchical (6)	-.25**	-.11	.05	-.22**	-.20**	1.00		
Rational (7)	.16*	.33***	.35***	.18*	.21**	-.10	1.00	
Consensuality Measures on Vision:								
Credibility (8)	.23**	.33***	-.03	.33***	.41***	-.10	.22**	1.00
Mean	25.52	25.37	25.29	25.38	24.99	25.08	25.37	25.32
S.D.	7.16	7.16	7.77	8.16	7.91	7.51	8.14	8.17
Skewness	-.11	.15	-.03	-.04	.88	.10	.54	.07
Range	9-41	7-46	8-47	7-43	10-50	9-46	4-57	6-41
N of Cases	116	116	119	119	119	119	119	119

* p < .05; ** p < .01; *** p < .001

Table 4.5 reports the means, standard deviations, skewness, ranges, and intercorrelations of eight organizational consensuality measures. The skewness of the consensuality measures indicates that the measures were all normally distributed. Correlations among consensuality measures were moderate, ranging from -.20 to .36.

Table 4.5

Descriptive Statistics and Intercorrelation of Organizational Consensuality Measures

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Consensuality Measures on Strategy:								
Product Diff. (1)	1.00							
Marketing Diff. (2)	.36***	1.00						
Cost Compet. (3)	.29***	.21***	1.00					
Consensuality Measures on Culture:								
Group (4)	.05	.06	.02	1.00				
Developmental (5)	.36***	.13***	-.02	.21***	1.00			
Hierarchical (6)	-.07*	.01	.16***	.01	-.20***	1.00		
Rational (7)	.11***	.16***	.31***	.17***	.18***	.17***	1.00	
Consensuality Measures on Vision:								
Credibility (8)	.10**	.16***	.07*	.31***	.23***	.02	.25***	1.00
Mean	25.27	25.21	25.50	25.20	24.93	25.06	25.30	25.38
S.D.	7.56	7.52	7.81	7.81	7.32	7.49	7.72	8.05
Skewness	-.26	.18	-.08	.34	.71	.17	-.06	.21
Range	2-47	1-46	1-51	5-55	7-52	5-47	2-46	4-48
N of Cases	724	695	743	760	759	760	760	759

* p < .05; ** p < .01; *** p < .001

Performance Measures

Two performance measures, i.e., competitiveness and innovativeness, were examined in relation to consensuality measures. Performance measures of the businesses were obtained from two sources: 1) information provided by a key informant¹⁰ within each business, and 2) information provided by all other respondents within each business. The use of two sources of performance measures, instead of one, is intended to increase the reliability of performance measures (Phillips, 1981) as no one source of data is perfectly reliable.

Competitiveness. Organizational competitiveness was a composite measure of business performance on multiple dimensions. It consisted of the competitive performance of businesses in both throughput capability and financial results. The throughput performance measure was derived by comparing the performance of the businesses to relevant competitors on 15 dimensions ($\alpha = .85$). Financial competitive performance was measured by comparing the financial performance of the business to its relevant competitor over the last three years.

The perceived performance of key informants and aggregated respondents on both throughput performance and financial performance were scaled into one overall competitiveness measure. Both factor analysis and reliability analysis ($\alpha = .70$) indicated the appropriateness of the scaling. Factor score coefficients were used to compute the overall competitiveness measure.

¹⁰ The key informant was often a general manager of the business. If a general manager was not included among the respondents, we used a finance professional. If neither a general manager nor a finance professional was included, we used a planning professional.

Innovativeness. Organizational innovativeness was a composite measure of the perceived innovativeness of businesses. Innovativeness is defined as the capacity of businesses to introduce new products or services (Bantel & Jackson, 1989). The percent of sales accounted for by products or services introduced in the previous three years was used to indicate the innovativeness of businesses (Lawrence & Lorsch, 1967). However, this measure may be confounded by the age and the size of businesses. Hence, both organizational age and size should be controlled for to avoid this confounding.

Both factor analysis and reliability analysis indicated the appropriateness of scaling the perceived business innovativeness of both key informant and aggregated respondents into a single overall measure ($\alpha = .64$). Factor score coefficients were used to scale the overall innovativeness measure.

Table 4.6 provides the descriptive statistics and intercorrelations among throughput performance measures, financial measures, and innovativeness measures. It shows that all performance measures were normally distributed and had reasonable standard deviations and skewness. Correlations among performance measures reported by key informants and aggregated respondents were all significantly correlated (.39 to .59). All throughput performance and financial performance measures were highly correlated, indicating the existence of a single factor (.32 to .55). Innovativeness was, however, negatively correlated with all competitive performance measures (-.07 to -.19). The correlation between overall competitiveness and overall innovativeness was -.19 ($p < .001$). Appendix G lists the questions for the performance measures.

Table 4.6

Descriptive Statistics and Intercorrelation of Performance Measures#

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Perceived Performance Measures by Key Informants:								
Through.Perf.(1)	1.00							
Fin. Perf.(2)	.46***	1.00						
Innovat.(3)	-.08*	-.19***	1.00					
Perceived Performance Measures by Aggregated Respondents:								
Through.Perf.(4)	.39***	.38***	-.15***	1.00				
Fin.Perf.(5)	.32***	.59***	-.18***	.55***	1.00			
Innovat.(6)	-.07*	-.13***	.57***	-.08**	-.13***	1.00		
Overall Performance Measures:								
Competit.(7)	.66***	.89***	-.20***	.65***	.82***	-.13***	1.00	
Innovat.(8)	-.09**	-.19***	.93***	-.14***	-.18***	.84***	-.19***	1.00
Mean	3.33	3.48	6.60	3.32	3.47	6.76	4.50	7.45
S.D.	.50	1.09	5.53	.30	.77	3.76	.68	4.63
Skewness	.06	-.35	.99	.04	-.63	.81	-.44	.90
Range	1-5	1-5	1-20	2.2-4.4	1-5	1-20	2.6-6.0	1.1-22
N of Cases	760	699	747	715	757	757	659	744

* $p < .05$; ** $p < .01$; *** $p < .001$

Competitive performance measures were answered on a 5-point scale whereas innovativeness measures were answered on a 20-point scale.

Perceived vs Objective Performance Measures. The use of perceived performance measures rather than objective performance measures may require some justification. While the importance and rationale for using objective performance measures are recognized, this study could hardly obtain objective performance measures at the level of businesses. Respondents were reluctant to provide data at that level. Nevertheless, the

use of perceived performance measures may not be a poor substitute for objective performance measures as recent research has demonstrated the convergence between objective and perceived performance measures (Dess & Robinson, 1984; Venkatraman & Ramanujam, 1987).

To further justify the use of perceived performance measures in this dissertation, the performance measures were cross-validated with the financial performance data provided by Compustat. To match the comparison, only the perceived performance measures of corporate-level businesses were compared to the financial data provided by Compustat. Data from 75 corporate-level businesses in our sample could be validated by Compustat. In addition, as questions about the financial performance and innovativeness of businesses referred to the last three years as the frame of reference, only the financial data three years prior to the year of data collection (i.e., 1985, 1986, and 1987) were used for comparison¹¹.

Four objective performance indicators commonly used in the literature were chosen for validation purposes. These were return on total assets (ROTA), return on sales (ROS), return on equity (ROE), and earnings per share (EPS) (Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982). In addition, the ratio of research and development expense to sales (R&D/S) was included to validate the innovativeness measure. Factor analysis showed that the five objective measures belonged to two underlying factors, with ROTA, ROS, ROE and EPS formed into one factor and R&D/S another factor. The first factor was then scaled into one overall objective measure by the factor score coefficients

¹¹ The 1987 financial data of many corporations were not available at the time of analysis. Hence, the averaged performance of corporations in 1985 and 1986 was used in most cases.

of the four measures. Correlations between the two objective performance measures and the two perceived performance measures are reported in Table 4.7.

Table 4.7
Correlations between Perceived and Objective Performance Measures

	Competitiveness	Innovativeness
Composite Factor: ROA,ROS,ROE,EPS	.405**	-.295*
R&D /Sales	-.463***	.525***

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4.7 indicates that significant positive correlations are found between the composite factor and competitiveness (.405), and between R&D/Sales and innovativeness (.525). The correlations between competitiveness and R&D/Sales and between the composite factor and innovativeness are significantly negative. These findings strongly support 1) the convergent validity between the two perceived performance measures and the two objective performance measures; and 2) the multidimensionality of competitiveness and innovativeness in operationalizing organizational performance.

Two implications can be derived from these findings. First, it supports the multidimensionality (Steers, 1975; Cameron & Whetten, 1983) and the tradeoff (Murray, 1989; Weick, 1983) of performance outcomes. Second, it may imply that most empirical studies (Bourgeois, 1980, 1985;

Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982) using ROTA, ROS, ROE, and EPS as indicators of performance may primarily examine organizational competitiveness. The extent to which their findings of consensus-performance relationships are generalizable to other performance outcomes is questionable.

In this section, the cross-validation of the perceived performance measures with Compustat financial data has provided some assurance on the reliability and validity of the performance measures.

Environmental Dynamism

Objective environmental dynamism was suggested to have a moderating effect on the consensuality-performance relationship. Objective environmental dynamism was calculated based on Compustat data.

Environmental volatility has been commonly used as an objective indicator of environmental dynamism (Bourgeois, 1985; Tosi, Aldag & Storey, 1973). Environmental volatility was examined at the industry level, following the assumption that the most relevant environment of a business is the industry in which it operates and competes (Porter, 1980; Dess & Beard, 1984). Volatility measures were calculated based on the industrial data provided by Compustat. Industry data for the five years prior to the time of data collection (1982-1986)¹² were retrieved.

The computation of volatility was based on the coefficient of variation of first differences (Bourgeois, 1985), modified after Tosi et al.'s (1973) method of calculation. Variation of first differences, instead of variation,

¹² Strictly speaking, the industry data from 1983 to 1987 should have been retrieved. As data in 1987 were mostly unavailable at the time of analysis, the data from 1982 to 1986 were used instead.

was used in order to detrend the yearly fluctuations (Bourgeois, 1985). The coefficient of variation of first differences was computed as follows:

$$\text{Volatility}_i = \frac{\sqrt{\sum_{j=1}^4 \frac{(x_j - \bar{x})^2}{4}}}{\bar{x}}$$

where i = industry characteristics (sales, income, etc.)
 j = between-year differences (1982-83, 83-84, 84-85, 85-86)
 x_j = between-year differences of industry characteristics
 \bar{x} = mean of 4 between-year differences of industry characteristics

Three kinds of volatility emphasized in current literature were examined (Bourgeois, 1985; Tosi, et al., 1973). Sales volatility was calculated based on the sales variation of an industry over 5 years. Income volatility was calculated based on the income variation (before tax and extraordinary items) of an industry over 5 years. Technology volatility was calculated based on the variation of R&D expenses/sales of an industry over 5 years.

Table 4.8 summarizes the three volatility measures of major industries included in this dissertation. In the table, large volatility values (in absolute value) indicate high environmental volatility. They indicate that industry sales, income, or technological expenditures vary greatly and unpredictably from year to year. A volatility measure with a positive sign indicates that the average revenues (or expenses) on this dimension is increasing in the last 5 years (as indicated by the denominator, which is the average of 4 between-year differences), while a volatility measure with a negative sign implies that the average revenues (or expenses) on this dimension is decreasing.

Table 4.8

Environmental Volatility of Businesses in Different Industries

Industry	SIC Code	No. of Busi.	Sales Volat	Income Volat	Tech Volat
PETROLEUM & GAS		60			
Crude Petroleum & Nat.Gas	1311	27	13.731	-3.921	1.173
Drilling Oil & Gas Wells	1381	9	-.709	-.776	-2.542
Petroleum Refining	2911	9	-3.778	-2.713	2.937
Petroleum & Pet Pds-whsl	5170	15	-3.357	-5.138	.000
CHEMICALS/PHARMACEUTICALS		89			
Chemicals & Allied Prds.	2800	38	.834	1.973	.920
Pharmaceuticals	2834	23	.611	.821	.293
Paints, Varnishes, Lacq.	2850	11	.775	.798	1.103
Drugs & Proprietary-whsl.	5120	11	.512	1.227	-.824
Chem.& Allied Pds.-whsl.	5161	6	1.774	1.107	.000
MACHINERY		48			
Engines & Turbines	3510	10	.891	4.766	-2.875
Farm & Garden Mach./Eq.	3520	8	3.703	-14.895	-3.616
Construction Mach./Eq.	3531	12	.349	1.510	-.358
Metalworking Mach./Eq.	3540	11	.428	4.214	-1.791
General Indust.Mach/Eq.	3560	7	1.968	1.177	-4.371
COMPUTERS & RELATED PDS.		76			
Electronic Components,NEC	3679	24	.408	5.808	1.885
Electronic Computing Eq.	3680	8	.131	7.403	.907
Computers-Mini & Micro	3681	9	.743	6.513	5.265
Computers-Mainframe	3682	10	.471	.844	4.008
Office Automation Systems	3687	5	.581	3.801	3.541
Computer Equipment, NEC	3689	7	.389	2.279	-4.451
Computer & Data Proc.Svc	7370	13	.293	.489	1.279
TRANSPORTATION		41			
Motor Veh. & Car Bodies	3711	7	.106	1.902	.815
Motor Veh. & Part.Access.	3714	19	.474	2.428	-1.215
Aircraft & Parts	3721	15	.705	3.334	3.609

Table 4.8

Environmental Volatility of Businesses in Different Industries
(Cont.)

Industry	SIC Code	No. of Busi.	Sales Volat	Income Volat	Tech Volat
FINANCE		61			
Savings & Loan Asso.	6120	12	.431	2.915	.000
Finance - Services	6199	49	.214	1.432	-1.968
LIGHT MANUFACTURING		48			
Food & Kindred Products	2000	8	.618	1.094	1.335
Textile Mill Products	2200	4	.881	.998	-.917
Apparel & Other Fin.Prds	2300	5	.720	.385	1.509
Paper & Allied Products	2600	17	.805	.847	-2.335
Newspaper, Printing & Pubg	2711	9	.661	.610	.000
Paper & Paper Prds - Whsl	5110	5	1.593	.720	.000
NON-METAL MATERIALS		24			
Rubber & Misc Plastic Prds	3011	17	2.559	4.183	12.293
Concrete, Gypsum & Plaster	3270	7	1.366	6.624	.923
IRON & STEEL		28			
Blast Furnaces & Steel Wk	3310	8	1.257	1.377	1.148
Rolling & Draw Nonfer.Metal	3350	1	1.146	12.902	1.732
Fabricated Plate Work	3443	1	-6.390	-1.897	-3.316
Metal Forgings & Stamping	3460	5	.798	-26.715	-10.988
Fabricated Metal Prds, Nec	3499	13	3.238	1.697	-2.155
ELECTRICAL MACHINERY/APP.		26			
Elec. Electr Mach, Eq.	3600	11	.356	1.764	.633
Elec Transmission/Dist.Eq	3610	3	.558	.928	-.400
Household Appliances	3630	2	.565	.847	-52.412
Radio & TV Receiving Sets	3651	4	.403	2.398	1.116
Search, Navigate & Guide Sys	3664	3	1.253	.582	2.323
Elec Apparatus & Eq.-Whsl	5063	3	1.027	1.433	-1.337

Table 4.8

Environmental Volatility of Businesses in Different Industries
(Cont.)

Industry	SIC Code	No. of Busi.	Sales Volat	Income Volat	Tech Volat
HIGH TECHNOLOGY PRODUCTS		28			
Engr. Lab & Research Eq	3811	1	.883	7.444	-2.485
Elec Meas & Test Instr.	3825	7	1.597	-2.364	1.092
Surgical, Med Instr, Appar.	3841	16	.576	.922	5.779
Photographic Equip & Supply	3861	4	.512	1.945	8.528
UTILITIES		27			
Utilities-Composite	0003	12	1.581	1.757	
Telephone Communication	4811	9	.809	.589	2.371
Electric Services	4911	2	.594	2.322	.000
Natural Gas Distribution	4924	3	1.442	.965	.000
Gas & Other Serv. Combined	4932	1	-1.392	46.068	.000
WHOLESALE & RETAILING		44			
Department Stores	5311	2	.517	.992	1.307
Grocery Stores	5411	21	.153	.175	-.687
Convenience Stores	5412	12	6.462	-2.653	1.571
Apparel & Accessory Stores	5600	6	.194	.301	.000
Eating Places	5812	3	.425	1.249	.000
SERVICES		27			
Hotels, Motels & Tour. Court	7011	14	.157	-10.736	.000
Hospitals	8060	8	.327	.862	.000
Educational Services	8200	1	.685	-1.525	-5.615
Engr, Architect, Survey Svc	8911	4	.417	-12.408	-.235
MISCELLANEOUS		37			
Miscellaneous Manufacturing	3990	37	.437	1.647	-1.926

Table 4.8 indicates that the three volatility measures were different from industry to industry. Variations among the three volatility measures were also great. The crude petroleum and gas industry (SIC = 1311) faced the highest sales volatility (13.73) while the gas and other services combined industry (SIC = 4932) faced the highest income volatility (46.07). The household appliance industry (SIC = 3630) had the largest technological volatility (-52.41). While the signs of the volatility measures indicate the trend of an industry on a specific dimension, the absolute values of these measures indicate the degree of volatility faced by an industry on that dimension (market, income, or technology).

Consistent with previous research (Bourgeois, 1985; Tosi, et al., 1973), factor analysis of the three volatility measures indicated the existence of two factors: market volatility (sales & income volatility) and technological volatility. Market volatility was scaled according to factor score coefficients.

Market volatility and technological volatility were, however, uncorrelated (-.02). Correlations between the objective environmental volatility measures and the perceived environmental unpredictability measures indicate that market volatility was significantly correlated with the two perceived unpredictability measures at the .001 significance level (.17 for both key informants and aggregated respondents) while technological volatility was not significantly correlated with the two perceived unpredictability measures (.01 for key informants and -.05 for aggregated respondents). Clearly, market volatility has more impact on organization members' perceptions of environmental dynamism.

To examine the moderating effects of environmental volatility, both market volatility and technological volatility were used to split the sample

into low and high volatility environments. Results indicated that the split based on technological volatility was not useful-consensuality-performance relationships were approximately the same in both low and high volatility environments. For the sake of parsimony, market volatility is used as the indicator of environmental dynamism in this study.

Control Variables

Organizational size and age were included as control variables in the study of the consensuality-performance relationship. Organizational size and age are important because they affect both organizational competitiveness and innovativeness (Baldrige & Burnham, 1975; Bantel & Jackson, 1989; Kimberly & Evanisko, 1981; Moch & Morse, 1977; Mohr, 1969; O'Reilly & Flatt, 1986). In addition, organizational size and age were included to reduce the possibility of alternative interpretations for organizational innovativeness¹³.

Organizational size was operationalized as the approximate number of employees (full-time equivalent) in the business. Organizational age was operationalized as the year of establishment of the business, subtracted from the constant "1989". Consistent with current literature (Bantel & Jackson, 1989; Kimberly & Evanisko, 1981), a natural logarithm function was taken for both organizational size and age to derive new variables. The transformation was intended to take account of their curvilinear relationships with performance measures and to reduce the effects of

¹³ In our operationalization of innovativeness, i.e., percent of sales accounted for by new products/service introduced in the last three years, organizational size and age may both provide alternative interpretations of the measure.

outliers¹⁴. The transformed measures of organizational size and age were used as control variables in this dissertation.

Table 4.9
Descriptive Statistics and Intercorrelation of Control Variables

Variables	(1)	(2)	(3)	(4)
Size (1)	1.00			
Ln(Size) (2)	.54***	1.00		
Age (3)	.17***	.37***	1.00	
Ln(Year) (4)	.17***	.40***	.86***	1.00
Mean	7744	7.98	55.99	3.66
S.D.	11253	1.92	39.59	1.04
Skewness	1.95	-.44	.62	-1.05
N of Cases	718	718	702	702

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4.9 reports the descriptive statistics and intercorrelations of control variables. Both organizational size and age had large means and standard deviations. Organizational size was positively skewed while Ln(year) was negatively skewed, both were still regarded as normally distributed. All four variables were significantly correlated. The correlations between size and Ln(size) and between year and Ln(year) were highly correlated (.54 and .86 respectively). Other correlations were moderate, ranging from .17 to .40.

¹⁴ The transformed variables of organizational size and age were found to have higher correlations with the performance measures than the untransformed organizational size and age.

Table 4.10

Intercorrelation Matrix among TMT Consensuality Measures, Environmental Moderator, Control Variables and Performance Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
TMT CONSENSUALITY MEASURES:													
S: Product Diff. (1)	1.00												
S: Marketing Diff. (2)	.38***	1.00											
S: Cost Compet. (3)	.13	.18*	1.00										
C: Group (4)	.24**	.30***	.03	1.00									
C: Developmental (5)	.43***	.19*	-.06	.37***	1.00								
C: Hierarchical (6)	-.25**	-.11	.05	-.22**	-.20**	1.00							
C: Rational (7)	.16*	.33***	.35***	.18*	.21**	-.10	1.00						
V: Credibility (8)	.23**	.33***	-.03	.33***	.41***	-.10	.22**	1.00					
MODERATOR:													
Envir. Dynamism (9)	-.14	-.00	-.03	-.03	.05	-.11	-.05	-.02	1.00				
CONTROL VARIABLES:													
L(size) (10)	-.11	-.14	.16*	.01	-.15	.16*	-.12	-.01	-.03	1.00			
L(year) (11)	-.08	-.01	.05	.20*	-.08	.07	-.02	-.01	.01	.40***	1.00		
PERFORMANCE MEASURES:													
Competitiveness (12)	.03	.26**	.25**	.34***	.10	-.03	.21**	.12	.03	.01	.17***	1.00	
Innovativeness (13)	.13	-.04	-.26**	-.16*	.18*	-.10	-.06	-.04	-.05	-.04	-.17***	-.14***	1.00

* p < .05; ** p < .01; *** p < .001

S: Strategy Variables; C: Culture Variables; V: Business Vision Variables

Table 4.10 reports the overall intercorrelation matrix of the TMT consensuality measures, environmental moderator, control variables and performance variables. Correlations were generally moderate. With the exception of the correlations between the consensuality measures of product differentiation strategy and developmental culture (.43) and between the consensuality measures of developmental culture and credibility of business vision (.41), all correlation coefficients are below .40. Correlations between TMT consensuality measures and performance measures were reasonable, ranging from -.26 to .34. Correlations between TMT consensuality measures and environmental dynamism were marginal and insignificant. Correlations between TMT consensuality measures and the two control variables were insignificant in most cases with three exceptions. To wit, organizational size was significantly correlated with TMT consensuality measures on cost competitive strategy (.16) and hierarchical culture (.16), and organizational age was significantly correlated with TMT consensuality on group culture (.20).

Table 4.11 reports the overall intercorrelation matrix of the organizational consensuality measures, environmental moderator, control variables and performance variables. Correlations were moderate, ranging from -.20 to .36. Correlations between organizational consensuality measures and performance measures ranged from -.20 to .28. Correlations between organizational consensuality measures and environmental dynamism were generally insignificant with the exception of correlations between environmental dynamism and organizational consensuality measures on two business strategies (marketing differentiation -.10; cost competitiveness .08). Correlations between organizational consensuality measures and the two control variables were low, ranging from -.13 to .15.

Table 4.11

Intercorrelation Matrix among Organizational Consensuality Measures, Environmental Moderator, Control Variables and Performance Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
ORGANIZATIONAL CONSENSUALITY MEASURES:													
S: Product Diff. (1)	1.00												
S: Marketing Diff. (2)	.36***	1.00											
S: Cost Compet. (3)	.29***	.21***	1.00										
C: Group (4)	.05	.06	.02	1.00									
C: Developmental (5)	.36***	.13***	-.02	.21***	1.00								
C: Hierarchical (6)	-.07*	.01	.16***	.01	-.20***	1.00							
C: Rational (7)	.11***	.16***	.31***	.17***	.18***	.17***	1.00						
V: Credibility (8)	.10**	.16***	.07*	.31***	.23***	.02	.25***	1.00					
MODERATOR:													
Envir. Dynamism (9)	-.02	-.10**	.08*	-.02	.05	.02	.05	.03	1.00				
CONTROL VARIABLES:													
L(size) (10)	.01	.06	.08*	.00	-.01	.12***	.07*	.06*	-.03	1.00			
L(year) (11)	-.10**	.06	.02	.08*	-.13***	.15***	-.02	.05	.01	.40***	1.00		
PERFORMANCE MEASURES:													
Competitiveness (12)	-.02	.17***	.14***	.17***	.00	.12***	.22***	.28***	.03	.01	.17***	1.00	
Innovativeness (13)	.18***	.04	-.17***	-.08*	.20***	-.20***	-.09**	-.02	-.05	-.04	-.17***	-.14***	1.00

* p < .05; ** p < .01; *** p < .001

S: Strategy Variables; C: Culture Variables; V: Business Vision Variables

Statistical Analyses

Multiple (OLS) regression is the primary technique to be used in this dissertation if the consensuality-performance relationship is found to be linear. With the assumed causality of consensuality affecting performance, multiple regression enables a simultaneous analysis of the influences of the eight consensuality measures on organizational performance.

To assess Hypothesis 1 (the consensuality-performance relationship is curvilinear) and to check whether multiple regression is appropriate for subsequent analyses, the linearity or curvilinearity of the consensuality-performance relationship had to be examined. Graphical plotting and Eta square were used to assess the linearity or curvilinearity of the consensuality-performance relationship. Blalock's (1979, p.430) test of non-linearity was adopted to check whether the consensuality-performance relationship deviated significantly from linearity:

$$F = \frac{E^2 - r^2}{1 - E^2} \times \frac{(n-k)}{(k-2)}$$

where E^2 is Eta squared
 r^2 is Pearson r squared
 n is number of cases
 k is number of categories of the ordinal variable
 denominator df is (k-2) and numerator df is (n-k)

If linearity is demonstrated, Hypothesis 2 (different consensuality-performance relationships on different performance outcomes), Hypothesis 3 (environmental moderating effects on consensuality-performance relationships), Hypothesis 4 (domains of consensuality), and Hypothesis 5

(scopes of consensuality) can all be assessed with regression analyses. The general equation in these analyses is:

$$y = a + bx_1 + bx_2 + \dots + bx_8 + \text{Ln}(\text{size}) + \text{Ln}(\text{year})$$

where y is the performance measure
 x_1, x_2, \dots, x_8 are the eight consensuality measures
 $\text{Ln}(\text{size})$ and $\text{Ln}(\text{year})$ are the two control variables

Samples were split into two groups by sample median to examine the moderating effects of environment¹⁵. TMT consensuality and organizational consensuality were analyzed separately to assess the scope of consensuality. As comparison is involved between two sub-samples in the examination of environmental moderating effects, unstandardized betas are reported in regression analyses. In doing so, no assumption is made regarding the variance of the sub-samples and the differences in the variance between sub-samples are not concealed.

Two statistical tests were used to assess the moderating effects of environmental dynamism. To assess whether the respective regression coefficients in two regression equations (for two sub-samples) are significantly different, a t-test statistic based on the following formula was used:

¹⁵ Moderated regression is not used to examine the moderating effects for three reasons. First, moderated regression analysis is able to tap only one specific form of interaction effect (multiplicative interaction effects that result in a linear relationship with the predicted variable). Second, moderated regression analysis is restricted to first-order interaction. Second or third order interactions are uninterpretable. Third, many interactive terms must be derived. The sample size imposes limits on the number of predicting variables.

$$t = \frac{B_a - B_b}{\sqrt{SE_a^2 + SE_b^2}}$$

where B_a and B_b are the coefficients of the same independent variable in the two equations
 SE_a and SE_b are their respective standard errors

This t-test statistic has been recommended by Blalock (1967) and Duncan (1975) for investigating whether a given causal model is the same in two or more different populations. The procedure was also employed in numerous studies (Bloch & Kuskin, 1978; Pfeffer & Ross, 1982).

Another procedure was developed to assess the variance attributed to the moderating effects of environmental dynamism¹⁶. The logic of this procedure rests on the fact that $R^2 = r_{ap}^2$. That is, the multiple correlation between a dependent variable and all predicting variables is equal to the bivariate correlation between the actual values of the dependent variable and the predicted values (based on regression analysis) of the dependent variable. The variance attributed to the moderating effect is then determined by the following formula:

$$\text{Variance attributed to moderating effects} = r_a^2 - r_b^2$$

where r_a^2 is the bivariate correlation between actual and predicted values of the predicted variable, using two regression equations in the two split samples (hence the moderating effects are taken into consideration)

r_b^2 is the bivariate correlation between actual and predicted values of the predicted variable, based on one regression equation of the overall sample (hence the moderating effects are not taken into consideration)

¹⁶ The suggestion of this creative procedure by Frank Andrews is acknowledged.

CHAPTER 5

RESEARCH FINDINGS

This chapter reports research findings on the examination of the five research hypotheses. Findings are reported in three sections, following the three-step analyses conducted in the study. Section 1 reports findings regarding the hypothesis on the linearity or curvilinearity of the consensuality-performance relationship (H1). This hypothesis was first examined as its findings would determine the choice of statistical method to be used in subsequent analyses. Section 2 reports findings of consensuality-performance relationships using the overall sample. Hypotheses on the influences of the types of performance outcomes (H2), the domains of consensuality (H4), and the scopes of consensuality (H5) are examined. Section 3 reports findings of consensuality-performance relationships based on split-samples. To examine the moderating effects of environmental dynamism (H3), the sample was split into two groups based on the median of environmental volatility. Consensuality-performance relationships in the low and high volatility environments were compared.

Linearity vs. Curvilinearity of Consensuality-Performance Relationship

The linearity of the consensuality-performance relationship was examined both statistically and graphically. All consensuality measures were first broken down into ten categories according to their percentile distribution (0-10%, 11-20%, ...,91-100%). The mean performance in each

of these ten categories was then calculated. Blalock's (1979) test of linearity was used to examine whether consensuality-performance relationships deviated significantly from linearity by comparing R^2 and Eta^2 . For those relationships that deviated significantly from linearity, graphical illustration was used to examine their functional forms.

Table 5.1 summarizes results of the test of linearity on 32 consensuality-performance relationships (8 consensuality measures x 2 scopes of consensuality x 2 performance outcomes). Of the 32 consensuality-performance relationships examined, only four of them deviate significantly from the linearity assumption. Of the four consensuality-performance relationships that deviate significantly from linearity, three of them are related to innovativeness (TMT consensuality on cost competitiveness, organizational consensualities on developmental culture, and hierarchical culture) and one of them competitiveness (organizational consensuality on hierarchical culture). All other consensuality-performance relationships do not deviate significantly from linearity at the .05 significance level.

Overall, the findings in Table 5.1 do not support the curvilinearity argument developed in Chapter 3. Consensuality-performance relationships are generally linear, consistent with the underlying assumption of many current studies (Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982). The functional form of the consensuality-performance relationship does not appear to be a major cause of current controversies regarding a positive vs. negative consensuality-performance relationship.

Table 5.1

The Test of Linearity on Consensuality-Performance Relationships

Relationships	Eta Square	R Square	F Value
TMT CONSENSUALITY:			
S: Product Diff.-Competitiveness	.1175	.0020	1.62
S: Marketing Diff.-Competitiveness	.1623	.0610	1.51
S: Cost Compet.-Competitiveness	.1395	.0503	1.32
C: Group-Competitiveness	.1964	.1158	1.28
C: Developmental-Competitiveness	.0341	.0149	.25
C: Hierarchical-Competitiveness	.0395	.0002	.52
C: Rational-Competitiveness	.1382	.0481	1.33
V: Credibility-Competitiveness	.0800	.0249	.76
S: Product Diff.-Innovativeness	.0497	.0176	.45
S: Marketing Diff.-Innovativeness	.1189	.0025	1.75
S: Cost Compet.-Innovativeness	.1915	.0596	2.22*
C: Group-Innovativeness	.0794	.0338	.68
C: Developmental-Innovativeness	.1136	.0372	1.17
C: Hierarchical-Innovativeness	.0946	.0170	1.17
C: Rational-Innovativeness	.0428	.0068	.51
V: Credibility-Innovativeness	.0298	.0002	.41
ORGANIZATIONAL CONSENSUALITY:			
S: Product Diff.-Competitiveness	.0124	.0008	.91
S: Marketing Diff.-Competitiveness	.0550	.0309	1.93
S: Cost Compet.-Competitiveness	.0224	.0188	.29
C: Group-Competitiveness	.0446	.0279	1.41
C: Developmental-Competitiveness	.0235	.0003	1.92
C: Hierarchical-Competitiveness	.0361	.0128	1.96*
C: Rational-Competitiveness	.0533	.0472	.52
V: Credibility-Competitiveness	.0884	.0818	.58
S: Product Diff.-Innovativeness	.0426	.0355	.65
S: Marketing Diff.-Innovativeness	.0137	.0018	1.02
S: Cost Compet.-Innovativeness	.0385	.0298	.81
C: Group-Innovativeness	.0112	.0037	.69
C: Developmental-Innovativeness	.0595	.0385	2.04*
C: Hierarchical-Innovativeness	.0728	.0362	3.61***
C: Rational-Innovativeness	.0215	.0073	1.32
V: Credibility-Innovativeness	.0193	.0002	1.78

* $p < .05$;

S: Strategy Factors; C: Culture Factors; V: Business Vision Factors

To examine further the linearity of consensuality-performance relationships, additional analyses split the sample into low and high consensuality groups according to the median of each consensuality measure. Correlations between consensuality measures and performance measures were conducted in the low and high consensuality groups respectively. Results indicated that for all the correlations that are significant, none of them has different correlational signs between the low and high consensuality groups. H2A and H2B are hence not supported.

Based on these findings, two conclusions can be drawn. First, Hypothesis 1 stating that consensuality-performance relationships are curvilinear is largely not supported. Second, multiple regression which is based on the linearity assumption is generally appropriate to examine other hypotheses. However, precautions need to be taken for those relationships that deviate significantly from linearity. To examine more exactly the functional forms of those nonlinear relationships and to see whether transformation is possible to convert them into a linear form, the four nonlinear relationships are plotted graphically, as illustrated in Figure 5.1 to Figure 5.4.

Figure 5.1 depicts the relationship between TMT consensuality on cost competitiveness strategy and organizational innovativeness. Notwithstanding considerable fluctuations, signs of curvilinearity are observed in the relationship. As the TMT consensuality on cost competitiveness strategy increases, organizational innovativeness decreases in the beginning, reaches the bottom in the middle, and then increases slightly in the end. An interesting implication of the finding is that a moderate amount of TMT consensuality on the cost competitiveness strategy is most detrimental to innovativeness. Business will be more innovative

when the cost competitiveness strategy is either lowly or highly consensual among the TMT members. In both cases, more new products or services can be developed.

If a straight line is used to fit the consensuality-performance relationship, a negative relationship between the TMT consensuality on cost competitiveness strategy and innovativeness is identified. It implies that when a business is focusing on the cost competitiveness strategy, the TMT consensuality around the strategy will generally decrease the innovativeness of the business.

Figure 5.1

Relationship between TMT Consensuality on Cost Competitiveness Strategy and Organizational Innovativeness

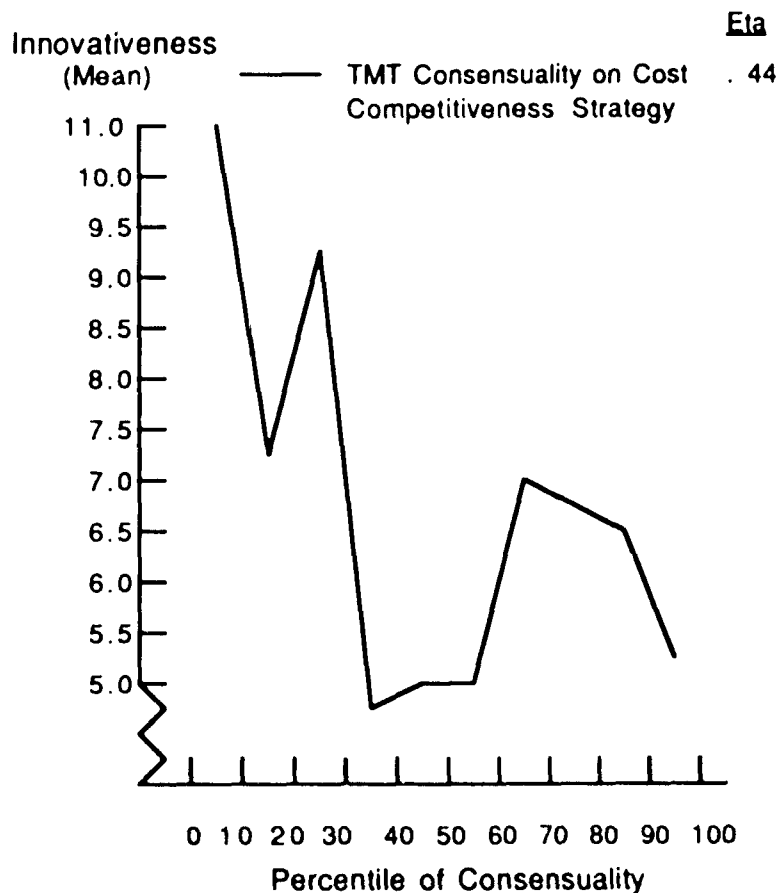


Figure 5.2 depicts the relationship between organizational consensuality on developmental culture and organizational innovativeness. In spite of some fluctuations, the general trend between the consensuality measure and organizational innovativeness is positive. When a business is characterized by developmental culture, the more organization members develop consensuality around it, the more innovative the business will be.

Figure 5.2

Relationship between Organizational Consensuality on Developmental Culture and Organizational Innovativeness

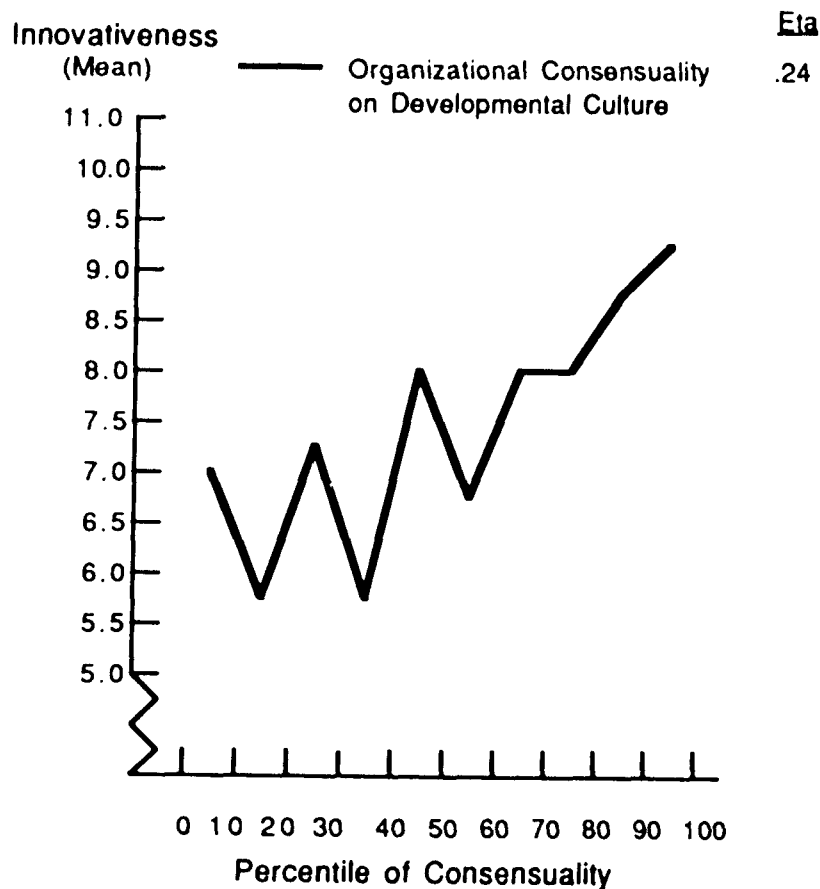


Figure 5.3 depicts the relationship between organizational consensuality on hierarchical culture and organizational innovativeness. Organizational innovativeness seems to decrease at a decreasing rate when organizational consensuality on hierarchical culture increases. When a business is characterized by hierarchical culture and organization members develop consensuality around it, the business tends to be less innovative. However, organizational innovativeness is sensitive to consensuality on hierarchical culture. A moderate amount of consensuality among organization members on hierarchical culture is sufficient to decrease organizational innovativeness substantially.

Figure 5.3

Relationship between Organizational Consensuality on Hierarchical Culture and Organizational Innovativeness

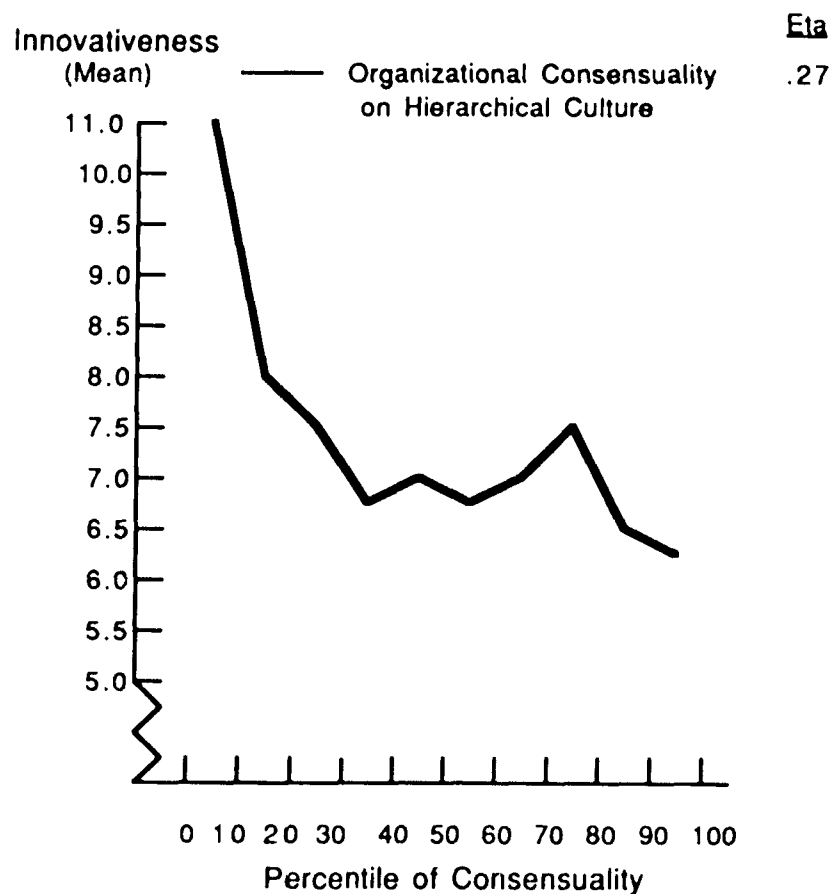
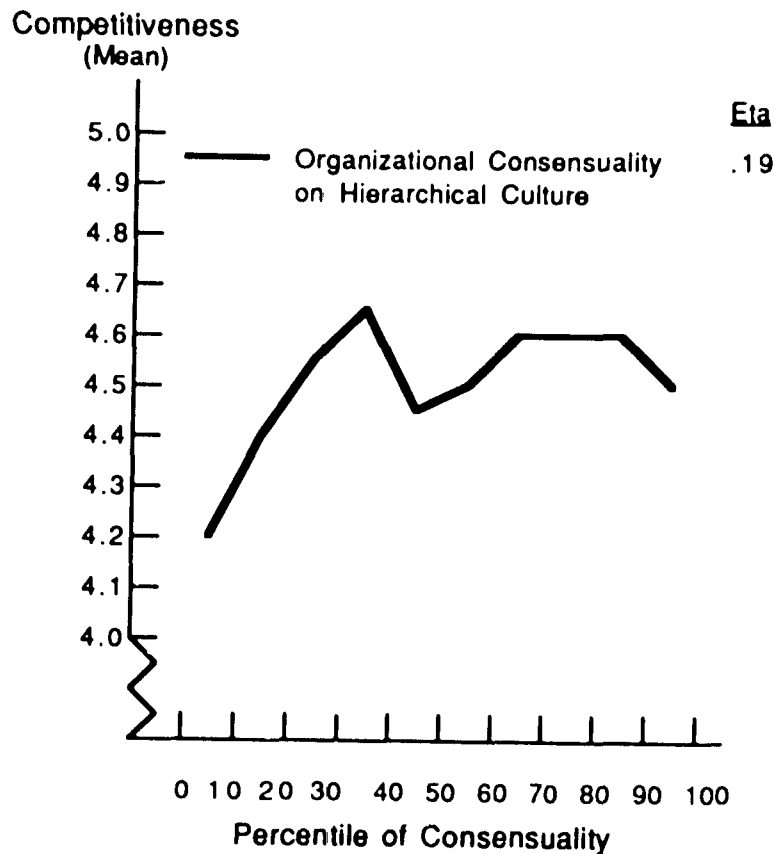


Figure 5.4 depicts the functional relationship between organizational consensuality on hierarchical culture and organizational competitiveness. When a business is characterized by hierarchical culture, consensuality of organization members around it will increase the competitiveness of the business in the beginning and then basically maintain the same level of competitiveness afterward. Similar to organizational innovativeness, organizational competitiveness is most sensitive to organizational consensuality on hierarchical culture in the early range.

Figure 5.4

Relationship between Organizational Consensuality on Hierarchical Culture and Organizational Competitiveness



Figures 5.1 to 5.4 have illustrated some interesting functional forms between consensuality and performance. However, no consistent functional form is identifiable in these relationships. No single and simple transformation seems available to convert these different functional forms into linearity. If different transformations are used to convert different relationships into linearity, the subsequent interpretation of findings can be difficult. As a matter of fact, straight lines seem to fit the general trend of these relationships reasonably well. For the sake of simplicity and consistency, these four relationships were analyzed, along with others, by multiple regression in the subsequent analyses. However, cautions should be taken in interpreting the findings of these relationships.

Overall Consensuality-Performance Relationships

To examine other hypotheses, a series of regression analyses were conducted using the whole sample. The two performance outcomes were regressed by both the consensuality measures and the control variables. The TMT consensuality and the organizational consensuality were analyzed and compared¹. To partition the variances explained by the consensuality measures and the control variables, the consensuality measures and the control variables were entered in ordered steps.

¹ Additional regression analyses were undertaken to examine the relationship between the performance outcomes and 1) consensualities at other hierarchical levels (i.e. individual contributors, managers, and directors), and 2) different scopes of consensualities (i.e. TMT+directors, TMT+directors+managers). Results indicate that the TMT consensuality and organizational consensuality are most significant in influencing the organizational outcomes.

Table 5.2 reports the results of four regression analyses with reference to the two performance outcomes and the two scopes of consensuality. Several observations can be made. First, all consensuality measures and control variables are found to be significant in at least one of the four regression analyses. In predicting organizational competitiveness, consensualities on marketing differentiation strategy, cost competitiveness strategy, group culture, hierarchical culture, rational culture, and credibility of vision are all positively related to competitiveness at .05 significance level. In predicting organizational innovativeness, consensualities on product differentiation strategy, cost competitiveness strategy, group culture, developmental culture, and hierarchical culture are significant.

It is interesting to note that the two performance outcomes are significantly predicted by either different variables or different relationships of the same variables. For instance, consensualities on marketing differentiation strategy, rational culture and credibility of business vision are significant in predicting competitiveness but not innovativeness whereas consensualities on product differentiation strategy and developmental culture are significant in predicting innovativeness but not competitiveness. Consensualities on cost competitiveness strategy, group culture and hierarchical culture have significant positive influences on organizational competitiveness but negative influences on organizational innovativeness.

Table 5.2
Overall Consensuality-Performance Relationships
(unstandardized betas are reported)

Independent/Control Variables	Competitiveness		Innovativeness	
	TMT Model	Organ. Model	TMT Model	Organ. Model
Consensuality on Strategy:				
Product Differentiation	-.009 (.010)	-.007 (.004)	.046 (.065)	.101*** (.028)
Marketing Differentiation	.016 (.010)	.008* (.004)	.004 (.060)	.013 (.026)
Cost Competitiveness	.019* (.009)	.009* (.004)	-.144** (.056)	-.119*** (.026)
Consensuality on Culture:				
Group	.021* (.009)	.008* (.004)	-.107 (.056)	-.049* (.025)
Developmental	.004 (.010)	-.004 (.004)	.130* (.061)	.094*** (.028)
Hierarchical	-.003 (.009)	.008* (.004)	-.025 (.055)	-.072** (.026)
Rational	.007 (.010)	.013*** (.004)	.035 (.054)	-.025 (.027)
Consensuality on Vision:				
Credibility	-.004 (.009)	.019*** (.004)	-.047 (.058)	-.020 (.024)
Lsize	.000 (.037)	-.049*** (.015)	.060 (.230)	.126 (.097)
Lyear	.146* (.063)	.130*** (.029)	-.821* (.386)	-.717*** (.192)
<hr/>				
R ²	.249	.181	.223	.161
Adjusted R ²	.166	.166	.142	.147
N of Cases	100	549	106	612
<hr/>				
Change in R² due to order of entry:				
1) Indept. Variables	.201	.146	.185	.142
2) Control Variables	.048	.035	.038	.019
1) Control Variables	.065	.038	.086	.041
2) Indept. Variables	.184	.143	.137	.120

*** Sig. at .001 level; ** Sig. at .01 level; * Sig. at .05 level

With reference to the two control variables, organizational size is found to significantly decrease competitiveness. However, organizational age is found to significantly increase organizational competitiveness but decrease organizational innovativeness.

The variances explained in the four regression equations are reasonably high, ranging from 16% to 25% in R squared and 14% to 17% in adjusted R squared. Partitioning the variances between the consensuality measures and the control variables indicates that the variances explained by the consensuality measures range from 12% to 20%, depending on the entry order of the variables. All these findings demonstrate that the variances explained in the regression equations are fairly high and are primarily attributed to the influence of the consensuality measures.

Comparing between the TMT model and organizational model, two observations are noted. First, all consensuality measures that are significant in the TMT model are also significant in the organizational model. However, not all consensuality measures that are significant in the organizational model are significant in the TMT model. Second, the variances explained in the TMT model seem to be slightly higher than those in the organizational model. However, no major difference is found in the adjusted R squared. Clearly, the differences in the R squared are fictitious and are resulted from the differences in the number of cases (100 in TMT model and 550 in organizational model). The consensuality measures that are not significant in the TMT model but significant in the organizational model may also be influenced by the number of cases in each equation.

It is also noteworthy that the four consensuality-performance relationships that deviated significantly from linearity in Table 5.1 are all significant in predicting their respective performance outcomes. This

indicates the robustness of regression analysis in examining these relationships. However, these relationships might have been stronger, were they not deviated significantly from linearity.

Based on the findings reported in Table 5.2, a brief examination of Hypothesis 2 (tradeoffs in performance outcomes), Hypothesis 4 (domains of consensuality), and Hypothesis 5 (scopes of consensuality) can be made. Additional analyses are also conducted to more specifically assess individual hypotheses.

Hypothesis 2: Tradeoffs in Performance Outcomes

Supports for possible tradeoffs in performance outcomes are demonstrated in Table 5.2. First, consensuality measures are found to have very different relationships with organizational competitiveness and organizational innovativeness. For instance, while consensuality on cost competitiveness strategy increases organizational competitiveness, it decreases organizational innovativeness. Table 5.3 further assesses whether the predicting variables of competitiveness and innovativeness are significantly different. Consensualities on cost competitiveness strategy, group culture, and hierarchical culture are found to have significantly more positive impact on competitiveness than innovativeness. On the other hand, consensualities on product differentiation strategy and developmental culture are found to have significantly more negative impact on competitiveness than innovativeness. Organizational size is found to have significantly more positive influence on competitiveness than innovativeness.

Table 5.3

Comparing the Predicting Variables of Competitiveness and Innovativeness
(T-statistics are reported)

Independent/Control Variables	TMT Model	Organ. Model
Consensuality on Strategy:		
Product Differentiation	-.84	-3.82***
Marketing Differentiation	.20	-.19
Cost Competitiveness	2.87**	4.87***
Consensuality on Culture:		
Group Culture	2.26*	2.25*
Developmental Culture	-2.04*	-3.46***
Hierarchical Culture	.39	3.04**
Rational Culture	-.51	1.39
Consensuality on Vision:		
Credibility	.73	1.60
Lsize	-.26	-1.78
Lyear	2.47*	4.36***

* $p < .10$; ** $p < .05$; *** $p < .01$ (2-tail sig. level)

In addition to the differences in the functional relationship between consensuality measures and the two performance outcomes, the significance level of individual consensuality measures also varies with different performance outcomes. Some consensuality measures that significantly predict organizational competitiveness are not significant in predicting organizational innovativeness, and vice versa. For instance, consensualities on rational culture and credibility of business vision (which are significant in predicting competitiveness) are not significant in predicting organizational innovativeness while consensualities on product differentiation strategy and developmental culture (which are significant in predicting innovativeness) are not significant in predicting organizational competitiveness.

While consensuality-performance relationships seem to vary with the two performance outcomes, the relationships only partly support Hypotheses 2A and 2B. The consensuality-performance relationship was hypothesized to be positive in predicting organizational competitiveness (H2A) and negative in predicting organizational innovativeness (H2B). While all consensuality-competitiveness relationships are positive, not all consensuality-innovativeness relationships are negative. Consensualities on product differentiation strategy and developmental culture, for instance, are positively related to organizational innovativeness. Hence, whether the consensuality-performance relationship is positive or negative depends not only on the performance outcomes, but also the factors around which consensuality develops. Consensuality-performance relationships are jointly determined by the performance outcomes and the content of individual consensuality measures. Consensuality measures are not content free.

Hypothesis 4: Domains of Consensuality

Consensuality measures on strategy, culture and credibility of business vision are all significantly related to at least one of the two performance outcomes. Consensuality-performance relationships are both positive and negative, depending on the specific factor or measure around which consensuality develops and the specific performance outcome. Hence, Hypothesis 4 stating that consensualities on strategy, culture, and business vision enhance organizational performance is partly supported.

Table 5.4

Partitioning Variances by Domains of Consensuality

	Entry Order of Consensuality Measures			Average Variance
	1	2	3	
Partitioning TMT Consensuality on Organizational Competitiveness:				
Strategy	.108	.083	.062	.084
Culture	.138	.011	.088	.112
Credibility of Vision	.010	.003	.001	.005
Control Variables				.048
Total Variance Explained				.249
Partitioning TMT Consensuality on Organizational Innovativeness:				
Strategy	.097	.081	.064	.081
Culture	.119	.102	.085	.102
Credibility of Vision	.000	.003	.005	.003
Control Variables				.038
Total Variance Explained				.223
Partitioning Organizational Consensuality on Organizational Competitiveness:				
Strategy	.045	.029	.017	.030
Culture	.087	.059	.034	.060
Credibility of Vision	.074	.055	.039	.056
Control Variables				.035
Total Variance Explained				.181
Partitioning Organizational Consensuality on Organizational Innovativeness:				
Strategy	.093	.068	.043	.068
Culture	.098	.073	.048	.073
Credibility of Vision	.000	.001	.001	.001
Control Variables				.019
Total Variance Explained				.161

To further assess the explanatory power of the three domains of consensuality on the two performance outcomes, Table 5.4 reports the partition of variances by the three domains of consensuality. As variances explained by the consensuality measures are affected by their order of entry in the regression equations, the average variances are calculated based on their different order of entry.

Table 5.4 indicates that consensuality measures on culture have the highest explanatory power on the two performance outcomes in both TMT and organizational models. The variances attributed to consensuality measures on culture range from .060 to .112. Consensuality measures on strategy have the second highest explanatory power on the performance outcomes except competitiveness in the organizational model. The variances attributed to consensuality measures on strategy range from .030 to .084. The explanatory power of the consensuality measure on the credibility of business vision is generally marginal, except in explaining organizational competitiveness in the organizational model. The variances explained by it range from .001 to .056.

As the unequal number of variables in each domain of consensuality may partly affect their relative explanatory powers in the two performance outcomes, analyses based on adjusted R squared have been conducted. A similar pattern of relative explanatory powers among the three domains of consensuality was found. Hence, this study indicates the relative importance of consensuality on culture in explaining both competitiveness and innovativeness.

Hypothesis 5: Scopes of Consensuality

Hypothesis 5A stating that the strength of the consensuality-performance relationship is stronger in the TMT model than in the organizational model seems supported, as shown in Table 5.2. The variances explained in the TMT model (.249 and .223 for competitiveness and innovativeness respectively) are found to be higher than those in the organizational model (.181 and .161 for competitiveness and innovativeness respectively). Consistent with the emphasis of current literature on TMT consensus, consensuality among TMT members seems to have higher explanatory power than consensuality among organization members.

The differences in variance, however, are partly confounded by the different sample sizes included in this dissertation (100 in the TMT model and over 500 in the organizational model). To partial out the confounding influence of sample size, the same businesses that included in the examination of TMT consensuality were used to examine the organizational consensuality. Based on the same sample, the variances explained by the organizational consensuality have increased to even slightly higher than those of the TMT consensuality (.255 for competitiveness and .246 for innovativeness). The differences in the variances explained by the TMT consensuality and organizational consensuality are thus confounded by the sample size rather than resulting from substantive interests. Hypothesis 5A is in fact not supported.

Hypothesis 5B to 5D examine the interaction between the scopes of consensuality and the domains of consensuality. It was hypothesized that the relationship between performance and consensuality on strategy is stronger in the TMT model than in the organizational model whereas the

relationships between performance and consensualities on culture and vision are stronger in the organizational model than in the TMT model. An examination of the findings in Table 5.2 and Table 5.4 does not indicate such systematic interaction. In Table 5.2, consensuality measures on strategy, culture and vision are all significant predictors in regressing the two performance outcomes in the organizational model. In the TMT model, regardless of the domains of consensuality, fewer predictors are significant in regressing the two performance outcomes. Interaction between the scopes of consensuality and the domains of consensuality is generally not found.

In Table 5.4, limited support for an interaction between the scopes and the domains of consensuality is found. Consensuality on vision is found to have higher explanatory power in predicting competitiveness in the organizational model (.056) than in the TMT model (.005). No substantial difference, however, is found in explaining innovativeness by consensuality on vision. Adjusting for the higher variances explained in the TMT model, the variances explained by consensualities on strategy and culture are not systematically different between the TMT and organizational models. Hypothesis 5 is largely not supported in this dissertation. Controlling for the confounding influence of sample size, no major difference is observed between the TMT consensuality and the organizational consensuality in predicting the two performance outcomes.

Summary

This section examines consensuality-performance relationships with reference to the two performance outcomes and the two scopes of consensuality. Findings strongly support Hypothesis 2 that consensuality-

performance relationships vary with performance outcomes. Moderate supports for Hypothesis 4 are also demonstrated. The three domains of consensuality are all significant predictors of at least one of the two performance outcomes in the TMT model or the organizational model. The consensuality-performance relationship, however, is jointly determined by the factor around which consensuality develops and the performance outcome. Hypothesis 5 stating that the strength of the consensuality-performance relationship is affected by the scope of consensuality (TMT consensuality has a stronger relationship with performance than organizational consensuality) and the interaction between the scopes and the domains of consensuality is not supported. No major difference between the TMT consensuality and the organizational consensuality is found, after the confounding influence of sample size is controlled for. In the next two sections, consensuality-performance relationships in low and high volatility environments are compared and the moderating effects of environmental dynamism are examined.

Consensuality-Competitiveness Relationships in Low- and High-Volatility Environments

Table 5.5 reports the consensuality-competitiveness relationship in low and high volatility environments. Due to the small number of cases available in the TMT model, and the similarity between the TMT model and the organizational model in the consensuality-performance relationship (as demonstrated in the last section), findings of the TMT model are reported for the purpose of reference rather than discussion.

Table 5.5
 Consensuality-Competitiveness Relationships
 in Low- and High-Volatility Environments
 (unstandardized betas and standard errors are reported)

Independent/Control Variables	Low Volatility Environment		High Volatility Environment	
	TMT Model@	Organ. Model	TMT Model@	Organ. Model
Consensuality on Strategy:				
Product Differentiation	.008 (.016)	-.002 (.007)	-.019 (.015)	-.006 (.006)
Marketing Differentiation	.008 (.015)	-.002 (.007)	.020 (.017)	.014** (.006)
Cost Competitiveness	.038** (.012)	.012* (.006)	-.014 (.014)	.005 (.006)
Consensuality on Culture:				
Group	.017 (.012)	-.004 (.006)	.023 (.017)	.012* (.006)
Developmental .	.006 (.013)	.007 (.006)	-.024 (.016)	-.015* (.007)
Hierarchical	.004 (.013)	.007 (.006)	-.019 (.013)	.006 (.006)
Rational	.019 (.012)	.020*** (.006)	.004 (.017)	.009 (.006)
Consensuality on Vision:				
Credibility	-.017 (.013)	.015** (.006)	.023 (.016)	.023*** (.006)
Lsize	-.087 (.048)	-.046* (.023)	.014 (.079)	-.053** (.021)
Lyear	.213* (.089)	.185*** (.044)	.011 (.102)	.050 (.042)
R ²				
	.486	.202	.434	.201
Adjusted R ²				
	.360	.165	.216	.170
N of Cases				
	51	222	36	261
Change in R ² due to order of entry:				
1) Indept. Variables	.399	.135	.433	.182
2) Control Variables	.087	.067	.001	.019
1) Control Variables	.118	.061	.047	.012
2) Indept. Variables	.368	.141	.387	.189

*** Sig. at .001 level; ** Sig. at .01 level; * Sig. at .05 level

@ Due to the small N, results of TMT model are reported only for reference.

Table 5.5 indicates that different consensuality measures are significant in predicting organizational competitiveness in low and high volatility environments. In a less volatile environment, organizational consensualities on cost competitiveness strategy, rational culture, and credibility of business vision are all found to have significant positive effects on organizational competitiveness. In a high volatility environment, organizational consensualities on marketing differentiation strategy, group culture, developmental culture and credibility of business vision are all significant predictors of organizational competitiveness.

The fact that different predictors are significant in predicting organizational competitiveness is interesting. While consensuality among organization members on cost competitiveness strategy is important in a less volatile environment, consensuality among organization members on product differentiation strategy is more important in a volatile environment. While organizational consensuality on rational culture is significant in a less volatile environment, organizational consensualities on group culture and developmental culture are significant in predicting competitiveness in a more volatile environment. These findings imply that in different environments, different kinds of values or thinking should be developed among organization members in order to enhance organizational competitiveness.

Consensuality on the credibility of business vision has positive effects on competitiveness regardless of different degrees of environmental volatility. Organizational size has negative effects on organizational competitiveness in both low and high volatility environments while organizational age increases organizational competitiveness only in a low volatility environment.

The variances explained by all predicting variables on competitiveness are 20% in both the low and high volatility environments. After the variances between the consensuality measures and the control variables are partitioned, the explanatory power of the three consensuality measures on competitiveness ranges from 10% to 16%, depending on the entry order of the variables. Consensuality measures appear to have higher explanatory power on competitiveness in a high volatility environment than in a low volatility environment.

Table 5.6

Comparing the Predicting Variables of Competitiveness
in Low- and High-Volatility Environments
(T-statistics are reported)

Independent/Control Variables	TMT Model@	Organ. Model
Consensuality on Strategy:		
Product Differentiation	1.23	.43
Marketing Differentiation	-.53	-1.74
Cost Competitiveness	2.82**	.82
Consensuality on Culture:		
Group Culture	-.29	-1.89
Developmental Culture	1.46	2.39**
Hierarchical Culture	1.25	.12
Rational Culture	.72	1.30
Consensuality on Vision:		
Credibility	-1.94	-.94
Lsize	-1.09	.22
Lyear	1.49	2.12*

* $p < .10$; ** $p < .05$; *** $p < .01$ (2-tail sig. level)

@ Due to the small N, results of TMT model are reported only for reference and should be interpreted with great cautions.

To further examine the moderating effects of environmental volatility, regression coefficients of individual predictors in the low and high volatility environments were compared. Table 5.6 reports the t-statistics examining the differences between the respective regression coefficients in the low and high volatility environments.

Table 5.6 indicates that the regression coefficients of organizational consensuality on developmental culture and organizational age are significantly different in the low and high volatility environments. For businesses characterized by developmental culture, organizational consensuality around developmental culture will lower organizational competitiveness significantly more for businesses in a high volatility environment than in a low volatility environment. Organizational age is found to have significantly more positive impact on competitiveness for businesses in a low volatility environment than in a high volatility environment.

Table 5.7

Net Variance Explained by Environmental Moderating Effects
on Organizational Competitiveness
(Based on Correlations between Actual and Predicted Values)

Variance	TMT Model@	Organ. Model
Variance with Moderating Effects	.467	.206
Variance without Moderating Effects	.249	.181
Net Variance	.218	.025

@ Due to the small N, results of TMT model are reported only for reference and should be interpreted with cautions.

Table 5.7 calculates the net variance attributed to the moderating effects of environmental volatility in explaining organizational competitiveness. By subtracting the variance explained by the predictors without considering the moderating effect of volatility (based on one regression equation of the overall sample) from the variance that considered the moderating effects of volatility (based on two regression equations in the low and high volatility environments respectively), the net variance attributed to the moderating effects of volatility can be determined. In the organizational model, about three more percent of variance can be explained when the moderating effects of environmental volatility are considered. The increase in the variance attributed to environmental moderating effects is considered as small when 18% of the variance has already been explained without considering the moderating effects.

In this section, several observations can be drawn by comparing consensuality-performance relationships in low and high volatility environments. First, environmental volatility does not moderate the consensuality-competitiveness relationship as hypothesized in H3. It was hypothesized that when the environment is stable, the consensuality-performance relationship is positive (H3A). When the environment is unstable, the consensuality-performance relationship is negative (H3B). While all consensuality measures that are significant in predicting competitiveness are positive in the low volatility environment, most of them are not negative (except consensuality on developmental culture) in the high volatility environment. Instead of moderating the signs of consensuality-performance relationships, environmental volatility is found to moderate the relationships by influencing the significance level of individual consensuality measures in predicting competitiveness. Different consensuality measures

are found to be significant in environments of different volatility. The examination of t-statistics in Table 5.6 indicates that the regression coefficients of organizational consensuality on developmental culture are significantly different in environments of low and high volatility. However, the variance attributed to environmental moderating effects is found to be relatively small in explaining competitiveness.

Consensuality-Innovativeness Relationships in Low and High-Volatility Environments

Table 5.8 reports the regression analyses of consensuality-innovativeness relationships in environments of low and high volatility. It indicates that in a less volatile environment, organizational consensualities on product differentiation strategy and developmental culture are found to increase organizational innovativeness while consensualities on cost competitiveness strategy and hierarchical culture are found to decrease organizational innovativeness. When businesses are committed to introduce differentiated products or services and are characterized by developmental culture (emphasizing entrepreneurial spirits and new ideas), consensuality of organization members increases organizational innovativeness. However, when businesses focus on a cost competitiveness strategy and are characterized by hierarchical culture (emphasizing formal rules and structure), consensuality of organization members decreases organizational innovativeness.

Table 5.8
 Consensuality-Innovativeness Relationships
 in the Low- and High-volatility Environments
 (unstandardized betas and standard errors are reported)

Independent/Control Variables	Low Volatility Environment		High Volatility Environment	
	TMT Model@	Organ. Model	TMT Model@	Organ. Model
Consensuality on Strategy:				
Product Differentiation	.024 (.092)	.090* (.040)	.115 (.115)	.074 (.043)
Marketing Differentiation	.038 (.082)	-.036 (.039)	.065 (.118)	.065 (.038)
Cost Competitiveness	-.214** (.073)	-.138*** (.037)	-.153 (.101)	-.118** (.038)
Consensuality on Culture:				
Group	-.108 (.070)	-.041 (.034)	-.063 (.123)	-.036 (.040)
Developmental	.121 (.075)	.094** (.038)	.119 (.125)	.078 (.046)
Hierarchical	.063 (.076)	-.116*** (.036)	-.028 (.100)	-.052 (.040)
Rational	.017 (.067)	.043 (.037)	.073 (.102)	-.032 (.041)
Consensuality on Vision:				
Credibility	-.006 (.075)	-.006 (.035)	-.156 (.125)	-.061 (.038)
Lsize	-.615* (.283)	-.115 (.143)	.523 (.590)	.282* (.146)
Lyear	-1.123* (.485)	-.625* (.271)	.173 (.764)	-.669* (.301)
<hr/>				
R ²	.500	.230	.203	.141
Adjusted R ²	.387	.197	-.082	.110
N of Cases	54	245	38	290
<hr/>				
Change in R ² due to order of entry:				
1) Indept. Variables	.319	.200	.176	.122
2) Control Variables	.181	.030	.027	.019
1) Control Variables	.305	.067	.001	.027
2) Indept. Variables	.195	.163	.202	.114

*** Sig. at .001 level; ** Sig. at .01 level; * Sig. at .05 level

@ Due to the small N, results of TMT model are reported only for reference.

In a more volatile environment, organizational consensuality on cost competitiveness strategy is found to significantly decrease organizational innovativeness. Consensuality on cost competitiveness strategy appears to decrease organizational innovativeness in both low and high volatility environments. Organizational age decreases organizational innovativeness in both low and high volatility environments while organizational size increases innovativeness in a high volatility environment.

The variances explained by the predicting variables on innovativeness are 23% in the low volatility environment and 14% in the high volatility environment. Consensuality measures are found to explain more in a less volatile environment than in a volatile environment. After the variances between consensuality measures and control variables are partitioned, the variances explained by consensuality measures range from 11% to 20%, depending on the entry order of the variables.

Table 5.9 compares the regression coefficients of predictors in the low and high volatility environments. The regression coefficients of all consensuality measures are not significantly different in environments of low and high volatility. Organizational size is found to have more negative influence on innovativeness in the low-volatility environment than in the high-volatility environment. The moderating effects of environmental volatility on consensuality-performance relationships are not strong in predicting organizational innovativeness. Consensuality measures are not significantly different in predicting innovativeness in environments of different volatility.

Table 5.9

Comparing the Predicting Variables of Innovativeness
in Low- and High-Volatility Environments
(T-statistics are reported)

Independent/Control Variables	TMT Model@	Organ. Model
Consensuality on Strategy:		
Product Differentiation	-.62	.27
Marketing Differentiation	-.19	-1.85
Cost Competitiveness	-.49	-.38
Consensuality on Culture:		
Group Culture	-.32	-.10
Developmental Culture	.01	.27
Hierarchical Culture	.72	-1.19
Rational Culture	-.46	1.36
Consensuality on Vision:		
Credibility	1.03	1.06
Lsize	-1.74	-1.94*
Lyear	-1.43	.11

* $p < .10$; ** $p < .05$; *** $p < .01$ (2-tail sig. level)

@ Due to the small N, results of TMT model are reported only for reference and should be interpreted with cautions.

Table 5.10 calculates the variance attributed to the moderating effects of volatility. Environmental volatility is found to have modest effects on the consensuality-performance relationship. The net variance attributed to the moderating effects of volatility is 4%, in addition to the 16% variance when environmental volatility is not considered.

Several observations can be made on the consensuality-innovativeness relationship. First, contrary to competitiveness, organizational consensuality on cost competitiveness strategy has significant negative effects on innovativeness (instead of positive effects on competitiveness)

Table 5.10

Net Variance Explained by Environmental Moderating Effects
on Organizational Innovativeness
(Based on Correlations between Actual and Predicted Values)

Variance	TMT Model@	Organ. Model
Variance with Moderating Effects	.423	.200
Variance without Moderating Effects	.223	.161
Net Variance	.200	.039

@ Due to the small N, results of TMT model are reported only for reference and should be interpreted with cautions.

while organizational consensuality on developmental culture has positive effects on innovativeness (instead of negative effects on competitiveness). Supports for performance tradeoffs are noted in the study of the consensuality-performance relationship. Second, environmental volatility does not significantly moderate individual predictors in the low and high volatility environments. Regression coefficients of all consensuality measures are not significantly different in the low and high volatility environments. Third, environmental volatility is found to have mild influence on the strength of the relationship between consensuality and innovativeness. Variance attributed to moderating effects of volatility is 4%.

Concluding Remarks on the Moderating Effects of Environmental Volatility

After comparing consensuality-performance relationships in the low and high volatility environments, it is time to integrate the findings and

examine Hypothesis 3. Hypothesis 3 states that environmental dynamism moderates the consensuality-performance relationship. When the environment is stable, the consensuality-performance relationship is positive. When the environment is unstable, the consensuality-performance relationship is negative. Findings in Tables 5.5 and 5.8 do not support these hypotheses. Consensuality-performance relationships do not change over different levels of environmental volatility in examining both competitiveness and innovativeness. Consensuality on credibility of business vision is found to be positively related to organizational competitiveness in both low and high volatility environments. Consensuality on cost competitiveness strategy is negatively related to organizational innovativeness in both low and high volatility environments. Hence, the moderating effects of environmental dynamism, as hypothesized in H3, are not supported.

However, the moderating effects of volatility are observed in areas other than originally hypothesized. First, environmental volatility moderates the significance level of different consensuality measures. In predicting organizational competitiveness and innovativeness, consensuality measures that are significant in the low volatility environment are often different from those that are significant in the high volatility environment. Hence, to enhance organizational performance in environments of different volatility, it is not the extent of consensuality that is most important, but the content of factor around which consensuality develops.

T-statistics, however, indicate that consensuality measures are not substantially different in predicting performance in environments of different volatility. Only consensuality on developmental culture is significantly different in predicting competitiveness. Other consensuality

measures are not significantly different in environments of different volatility.

By partitioning the variance attributed to the moderating effects of environmental volatility, it is found that environmental volatility also moderates the consensuality-performance relationship through the strength of relationship. While the net variances are not very high in predicting both organizational competitiveness and innovativeness, environmental volatility does demonstrate some explanatory power in accounting for the performance outcomes.

Conclusion

In this chapter, the five research hypotheses have been examined with reference to an extensive database. Several major findings are reported. First, consensuality-performance relationships are found to be linear in most circumstances. Second, consensuality-performance relationships vary with the two performance outcomes. Third, environmental volatility does not moderate consensuality-performance relationships as hypothesized in Chapter 3. Environmental volatility, however, moderates consensuality-performance relationships in the significance level of consensuality measures and the strength of consensuality-performance relationships. Fourth, the three domains of consensuality are found to have significant effects on organizational performance. Individual consensuality-performance relationships are jointly determined by the content of the consensuality measures and the performance outcomes. Finally, the scopes of consensuality are not found to have major effects in the examination of consensuality-performance

relationships. The TMT model explains almost as much as the organizational model, after controlling for the sample size. No systematic interaction between the domains and the scopes of consensuality is observed.

In Chapter 6, all these findings are to be discussed with reference to current literature. Implications of these findings and directions for future research are also suggested.

CHAPTER 6

DISCUSSION AND IMPLICATIONS OF RESEARCH FINDINGS

This chapter discusses and integrates the major research findings of the dissertation. Implications for both researchers and practitioners are derived and directions for future research are suggested. Limitations of the study are explicitly highlighted.

Research Findings of the Five Hypotheses

Using the current controversies of the consensuality-performance relationship as a point of departure, five research issues that may confound the relationship have been assessed in Chapter 5. Cognitive consensuality has shown interesting and complex relationships with organizational performance. The research findings of this dissertation are both expected and unexpected. Table 6.1 summarizes the research findings on the five hypotheses and suggests a brief explanation on why each of the hypotheses are supported or not supported.

Of the five research hypotheses examined, Hypothesis 2 is the only hypothesis that is strongly supported. Consensuality-performance relationships are found to vary systematically between the two performance outcomes. This finding has important contributions to the understanding of current controversies over consensuality-performance relationships. Consensuality-performance relationships can be either positive or negative, depending on the performance outcome being examined. The conflicting theoretical arguments among two groups of researchers, as summarized in Table 3.2, can be resolved when the performance outcome is clearly

Table 6.1

Research Findings on the Five Research Hypotheses

RESEARCH HYPOTHESES	FINDINGS	CONCLUSION	EXPLANATION
H1. Consensuality-performance relationships are curvilinear	Consensuality-performance relationships are not significantly deviated from linearity	Hypothesis 1 is not supported	Tradeoffs between formulation and implementation of decisions are not supported. Competitiveness seems primarily related to implementation of decision while innovativeness creation of ideas.
H2. Consensuality-performance relationships vary with performance outcomes	Most consensuality-competitiveness relationships are positive while most consensuality-innovativeness relationships are negative	Hypothesis 2 is largely supported	Consensuality is positively related to performance because of better implementation. Efficiency of control, confidence in enactment, coordination of organizational action, concentration of resources, and cohesiveness of members all enhance competitiveness. Consensuality is negatively related to performance because of lower creativity. Decrease in cognitive efforts, simplification of individual understanding, lower sensitivity in sensing the need for change all lower creativity.
H3. Environmental dynamism moderates consensuality-performance relationship	Consensuality-performance relationship is not positive in stable environment and not negative in changing environment	Hypothesis 3 is largely not supported	Environment may moderate consensuality more significantly in TMT because the moderating processes affect the work of TMT more directly. Industry effects are not adequately controlled as volatility may vary from one industry to another.

Table 6.1 (Cont.)

Research Findings on the Five Research Hypotheses

RESEARCH HYPOTHESES	FINDINGS	CONCLUSION	EXPLANATION
H4. Consensualities on strategy, culture and credibility of business vision enhance organizational performance	Consensuality-performance relationships on all 3 domains depend on the outcome variable and the content of consensuality measures	Hypothesis 4 is not supported	Consensuality-performance relationships of 3 domains are formulated tentatively. The hypothesis is too general. Contents of individual consensuality measures are more important in explaining the relationships.
H5. Strength of consensuality performance relationship is affected by the scope of consensuality and the interaction between scope & domain of consensuality	No real difference between TMT and organizational consensuality on performance. Interaction between scopes and domains of consensuality not observed	Hypothesis 5 is largely not supported	The insignificant difference may attribute to the small sample examined in each business and relatively small sample in studying the TMT consensuality

specified. This finding also suggests the importance of examining different dimensions of organizational performance in the future studies of consensuality-performance relationships. Current studies often examine a single performance dimension (though several variables are included) of either competitiveness (Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982) or innovativeness (O'Reilly & Flatt, 1986; Bantel & Jackson, 1989). The systematic variations between consensuality and different performance outcomes have seldom been investigated.

The generally positive consensuality-competitiveness relationship identified in this dissertation suggests that organizational competitiveness may relate more to the implementation of decision than the formulation of decision (refer to Figure 3.1). How a business compares to its competitors in its current market may depend primarily on how the business implements its decision efficiently and effectively. Efficiency of control, confidence in enactment, coordination of organizational action, concentration of resources, and cohesiveness of organization members are explanations for a positive consensuality-competitiveness relationship as a result of better implementation.

The general negative consensuality-innovativeness relationship, however, indicates the importance of creativity in organizational innovativeness. Consensuality hinders creativity as a result of decrease in cognitive efforts of members, simplification of individual understanding on organizational problems, and lower sensitivity to sense the need of change. Consequently, organizational innovativeness is lowered when creativity of members decreases. While some researchers also argue the importance of implementation in organizational innovation (O'Reilly & Flatt, 1986), this study supports the relative importance of creativity over implementation.

The other four hypotheses are generally not supported in this dissertation. However, new findings with reference to these hypotheses are found though they are different from what originally hypothesized. These new findings will be discussed and integrated with other findings in the next section. In this section, attention will focus on why these hypotheses are not supported.

Hypothesis 1 stating that consensuality-performance relationships are curvilinear is not supported. Most consensuality-performance relationships examined in this dissertation do not deviate significantly from linearity. One possible reason for the linear consensuality-performance relationship is that competitiveness and innovativeness are enhanced by different aspects of decision making (implementation vs. formulation), but not both. As a result, the higher the consensuality among members, the better implementation of organizational decisions, and hence the more competitive the business. As to organizational innovativeness, the lower the consensuality among members, the higher the creativity, and subsequently the more innovative the business. The tradeoff between implementation and formulation of decision making, as suggested in Fig. 3.1, is not supported in examining the consensuality-performance relationship in this dissertation.

Hypothesis 3 stating that environmental dynamism moderates the consensuality-performance relationship is largely not supported. Two explanations are suggested for this finding. First, at a theoretical level, the moderating effects of environmental dynamism seem to have more impact at the TMT consensuality than the organizational consensuality. As suggested earlier in this dissertation, environmental dynamism moderates consensuality-performance relationships by posing different kinds of

organizational problems, dictating the amount of change organizations have to make to be adaptive, and affecting the degree of accuracy of environmental perception. These three processes, however, are more relevant to the work of TMT members than organizational members at large. Hence, the TMT consensuality should be more susceptible to the moderating effects of dynamism than the organizational consensuality. Unfortunately, the TMT consensuality was not used in examining the moderating effects of environment due to its insufficient sample size.

Empirically, the insignificant moderating effects of environmental dynamism may result from the inadequate control of the industry effect. As organizations in different industries face different degree of environmental volatility, volatility considered as high in one industry may be regarded as low in another. Thus, the moderating effect of environmental dynamism should be more accurately assessed on an industry-to-industry basis. However, the small sample size in each industry forbids such industry analysis.

Hypothesis 4 stating that consensualities on strategy, culture, and credibility of business vision enhance organizational performance is not supported. The finding is not too surprising as the hypothesized positive consensuality-performance relationship was formulated very tentatively due to the lack of research in the domains of culture and credibility of business vision. Also, the hypothesis was formulated too generally. Individual consensuality measures, not domains of consensuality, seem to be more important in explaining the relationships.

Finally, Hypothesis 5 stating that the strength of consensuality-performance relationship is affected by the scope of consensuality and the interaction between scope and domain of consensuality is not supported.

The insignificant difference between the TMT consensuality and the organizational consensuality may attribute to two reasons. First, the number of respondents sampled from each business is small. As a result, the respondents may not adequately represent organizational consensuality. Second, the relatively few businesses used in studying the TMT consensuality prohibits a direct comparison between TMT and organizational consensualities in environments of different volatilities.

After providing a brief explanation on why the five hypotheses are or are not supported, it is time to integrate all research findings (expected and unexpected) and summarize what are being learnt in this dissertation. Four research propositions are developed in the next section to synthesize all major findings.

Integration of Major Research Findings

Four research propositions are derived in this section to integrate the discussion of major research findings, the research implications of these findings, and suggested directions for future research. The four propositions aim to conclude the key findings of the study and to lay a groundwork for future research on the consensuality-performance relationship.

To facilitate discussion, consensuality-performance relationships under different environmental volatilities, with reference to the two scopes of consensuality and the two performance outcomes are summarized in Table 6.2. Consensuality measures that are significant in predicting the performance outcomes in each contingency are listed and the average variances accounted by the consensuality measures are reported.

Table 6.2
Summary of Consensuality-Performance Relationships *

Performance Outcomes	Low Volatility	High Volatility	Overall Sample	
	Organ. Model	Organ. Model	TMT Model	Organ. Model
Competitiveness	S: Cost Compet.(+) C: Rational (+) V: Credibility (+)	S: Mktg.Different.(+) C: Group (+) C: Developmental (-) V: Credibility (+)	S: Cost Compet. (+) C: Group (+)	S: Cost Compet.(+) S: Mktg.Different.(+) C: Group (+) C: Hierarchical (+) C: Rational (+) V: Credibility (+)
	$R^2 = .138$	$R^2 = .186$	$R^2 = .193$	$R^2 = .145$
Innovativeness	S: Prod.Different.(+) S: Cost Compet. (-) C: Developmental (+) C: Hierarchical (-)	S: Cost Compet. (-)	S: Cost Compet. (-) C: Developmental (+)	S: Prod.Different.(+) S: Cost Compet. (-) C: Group (-) C: Developmental (+) C: Hierarchical (-)
	$R^2 = .182$	$R^2 = .118$	$R^2 = .161$	$R^2 = .131$

* The average variances of consensuality measures are reported in this table. They were calculated based on the partitioned variances of consensuality measures only. As different entry order of the consensuality measures and control variables result in two different variances, the two variances were averaged to provide the average variance.

S: Strategy Variables; C: Culture Variables; V: Business Vision Variables

Proposition 1: Cognitive consensuality of organization members predicts organizational performance.

As indicated in Table 6.2, consensuality measures are found to be significant predictors of the two performance outcomes in the overall sample and in both low and high volatility environments. Variances explained by the eight consensuality measures are reasonably high, ranging from 12% to 19%.

These findings signify the importance of cognitive consensuality as a construct in understanding organizational performance. While most of the current studies in strategic management (Miles & Snow, 1978; Porter, 1980) and organizational theory (Ouchi, 1981; Quinn & McGrath, 1984) emphasize the development of a specific strategy, culture, or vision under specific contingencies, this study indicates that the extent of sharedness among organization members on the chosen or dominant strategy, culture, and vision is also important. By differentiating the extent of sharedness from the content of sharedness, this study explicitly demonstrates the importance of cognitive consensuality, which has often been assumed implicitly. By systematically examining cognitive consensuality with an extensive database, this dissertation also empirically strengthens the significance of research in this area (Bantel & Jackson, 1989; Bourgeois, 1980, 1985; Dess, 1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982; Murray, 1989; O'Reilly & Flatt, 1986).

To researchers, the proposition that cognitive consensuality predicts organizational performance implies that more scholarly attention should be devoted to the study of consensuality. Research can be extended in two directions. First, the interaction between the emphasis on a specific strategy, culture, vision and the consensuality on that specific strategy,

culture, vision in predicting organizational performance should be examined. The question is: "Will relationships between organizational performance and specific strategy, culture or vision differ in businesses with low or high consensuality?" The research question will also shed light on some cross-cultural studies as businesses in different countries (e.g., U.S. vs. Japan) may be characterized by different degrees of consensuality among organization members.

Second, future research on consensuality should go beyond the performance focus of this dissertation. The influence of cognitive consensuality on other aspects of organizational processes should be considered. The antecedents of cognitive consensuality should also be examined. Many research questions are still relatively unexplored. For instance, what are the antecedents that are important in developing cognitive consensuality in different domains, at different scopes, and in different environmental contexts? Are these antecedents generic across different kinds of consensuality or specific to certain kinds of consensuality?

Proposition 2: Consensuality-performance relationships are outcome-specific.

One of the most important findings in this dissertation is that consensuality-performance relationships vary with the two performance outcomes. The relationships between the two performance outcomes and the consensuality measures on cost competitiveness strategy and developmental culture, as indicated in Table 6.2, provide strong support for this proposition. The consensuality-performance relationship can be either positive or negative, depending on the specific performance outcome.

These findings are significant in three regards. First, they support the multidimensionality of organizational performance and the concept of

tradeoff in performance outcomes. The tradeoffs between short-term competitiveness and long-term viability, as argued by Weick (1979a) and (Murray, 1989), are demonstrated in the examination of consensuality-performance relationships. Second, they help resolve the current controversy on the functional relationship between consensuality and performance. Whether the relationship is positive or negative is related to the performance outcome being studied. Third, these findings raise the issue of generalizability of research findings from one study to another if the studies adopt different performance outcomes. In reviewing studies related to the consensuality-performance relationship, attention should be paid to the outcome variables that are being used.

To researchers, the performance tradeoffs demonstrated in the examination of the consensuality-performance relationship may have implications for other related research. Does research in related areas, e.g., consensus, group demography, etc. have similar properties (e.g., different relationships with different outcomes) in predicting organizational performance? New insights may be drawn in the study of related research areas.

To practitioners, this proposition implies that the choice of the specific outcome desired should be made prior to the development of cognitive consensuality within businesses, as organizational competitiveness and innovativeness are difficult to attain simultaneously. Also, consensuality among organization members may not always enhance organizational performance, as implied in much practitioner-oriented literature. On the contrary, it may actually decrease organizational performance if innovativeness is the primary goal of an business.

Proposition 3: The choice of factor/measure used to develop consensuality is contingent on the environmental context and the performance outcome.

Table 6.2 clearly indicates that in environments of differing volatility, different consensuality measures are important in affecting different performance outcomes. First, the consensuality measures that are significant in predicting the two performance outcomes vary from one contingency to another. For instance, consensuality on a marketing differentiation strategy is found to significantly predict competitiveness only, while consensuality on a product differentiation strategy is found to significantly predict innovativeness only. Second, consensuality-performance relationships differ from one contingency to another. Consensuality on a cost competitiveness strategy has a positive relationship with competitiveness but a negative relationship with innovativeness.

These findings also indicate that the content of consensuality, in addition to the extent of consensuality, is important in affecting organizational performance in environments of different volatility. By conceptually differentiating the content and the extent of sharedness, this dissertation concludes that both the content and the extent of sharedness are important in predicting organizational performance. Both the content and the extent of sharedness have independent influences on organizational performance. The importance of the content of sharedness is illustrated by the fact that consensualities on different strategies, cultures, or vision are significant in predicting the performance outcomes in different environmental contexts. Consensuality on one strategy (e.g., product differentiation strategy) is clearly different from consensuality on another strategy (e.g., marketing differentiation strategy) in predicting performance. The importance of the extent of shared cognition is demonstrated by the fact

that different consensuality-performance relationships exist with respect to different performance outcomes. The choice of the "right" strategy around which consensuality develops does not guarantee high performance. By increasing or decreasing the consensuality of members on the strategy (e.g., cost competitiveness strategy), different performance consequences may ensue. Contrary to the implicit assumption of many studies in strategy, culture and vision, cognitive consensuality does not always enhance performance.

To researchers, these findings imply that future studies should be more explicit in articulating their assumptions about cognitive consensuality in the study of shared cognition. As indicated in this dissertation, cognitive consensuality may modify the assumed relationship between shared cognitions and organizational performance. Consensualities on individual strategies, cultures, and vision do not necessarily enhance organizational performance in all contexts. Hence, future research in shared cognition should be more specific in stating the extent and the content of consensuality measures with reference to specific performance outcomes.

In this study, environmental volatility was found to moderate the consensuality-performance relationship by affecting the significance level of individual consensuality measures. Future research should also be directed at the moderating effects of other environmental dimensions (e.g., complexity, munificence), as suggested by some researchers (Dess & Origer, 1987). The effects of perceived environment vs. objective environment (Downey et al. 1975; Tosi, et al., 1973) in the study of the consensuality-performance relationship should also be compared.

To practitioners, this dissertation implies that attention should be paid to the environmental contexts and the performance outcomes of their

businesses before decisions are made on how much consensuality and what kind of consensuality are to be developed. Consensuality developed to different extents and in different contents may lead to different outcomes in different environmental volatilities. Blind imitation of organizational practices from one business to another may be risky and counterproductive.

Proposition 4: Consensuality on culture is relatively important in predicting organizational performance

In Table 5.4, the partition of variances among the three domains of consensuality indicates the relative importance of consensuality on culture in predicting performance. Consensuality on culture explains more than consensualities on strategy and vision with regard to organizational competitiveness and innovativeness. This finding holds in both the TMT model and the organizational model.

While studies on strategy, culture, and business vision have all implicitly or explicitly assumed the importance of cognitive consensuality, this dissertation found that consensuality on culture is the most important one in explaining the two performance outcomes. This finding partly explains the popularity of organizational culture over the last decade in both the academic and business worlds. However, as indicated in Table 6.2, consensualities on all the three domains are also found to be significant in predicting at least one of the two performance outcomes. This finding also indicates the importance of sharedness in strategy and business vision.

To researchers, these findings suggest the importance of additional research on the study of consensuality on culture. While many empirical studies related to consensuality-performance relationships have been conducted with reference to business strategy (Bourgeois, 1980, 1985; Dess,

1987; Dess & Keats, 1987; Hrebiniak & Snow, 1982), few studies have examined consensuality in the area of culture. The impact of consensuality on culture on other organizational processes should also be examined.

Limitations of the Dissertation

While this dissertation has demonstrated interesting and important relationships between consensuality and performance, it has three major limitations in the study of consensuality-performance relationship.

First, while many benefits can be derived from using an existing database, costs must also be borne. Due to the primary purpose of the original research project, questions were not tailor-made for the study of consensuality. In addition, the sample is non-random and skewed toward larger businesses. Although data were carefully screened to ensure their appropriateness in the study of consensuality-performance relationships, the generalizability of the research findings to smaller businesses is uncertain.

Second, despite the research efforts to collect data from multiple respondents in each business, the percentage of respondents participating in the study in each business is still regarded as low. The extent to which the cognitive consensuality of respondents can represent the cognitive consensuality of a business is questionable.

Third, the causal relationships between cognitive consensuality and the performance outcomes are difficult to establish empirically. While Hrebiniak and Snow (1982) demonstrated that the relationship between consensus and organizational competitiveness is strongest in the same year, the time lag that is required for organizational innovativeness to occur is not certain. If longitudinal data were collected, the conclusion on the

consensuality-performance relationship would likely have been much stronger.

Fourth, the survey methodology employed in this dissertation traded depth of the study for extensiveness of the study. While systematic and comprehensive assessment of the consensuality-performance relationship can be undertaken through an extensive database, the subtleties of information in a specific context are missing. Qualitative research through case studies or more unstructured methodologies are recommended to triangulate the research phenomenon (Jick, 1979).

Conclusion

Notwithstanding these limitations, this dissertation has attempted to integrate, frame, reconcile and extend beyond current studies of the consensuality-performance relationship. A systematic and comprehensive assessment of the consensuality-performance relationship was undertaken. Interesting findings were reported and discussed. Implications and directions for future research have been suggested. Research with different methodologies and operationalizations of the construct is particularly urged to further examine and evaluate the significance of the construct.

APPENDICES

APPENDIX A:
FIRMS PARTICIPATING IN THE RESEARCH

* 3M	Liz Clairborne
Aetna Life & Causality	Lockheed
* American Cyanamid	* Marriott
# American Express	# Marsh & McLennan
* Amoco Corporation	* Martin Marietta
Arco Oil & Gas	* McKesson
* Armstrong World	Merck & Co.
A T & T	Meridian Bank
Baxter Travenol	MichCon Gas
Bethlehem Steel	# Motorola
# Borg Warner Chemicals	# National Intergroup
# Caterpillar	NCR Corporation
Champion International	New York Life
Chase Manhattan Bank	Northrop
Chemical Bank	* Norton
Chevron	# PACCAR
Chrysler Corporation	Pacific Gas & Electric
Combustion Engineering	Pacific Telesis
# Control Data	# Pfizer
* Corning Glass Works	Phillips Petroleum
* CSX Corporation	* PPG Industries
Cummins Engine	Prudential Insurance
Cyclops Corporation	# Rockwell International
Data General	Scott Paper
Deere & Co.	# Sears, Roebuck & Co.
Dow Jones & Co.	Security Pacific
* Du Pont	# Sherwin-Williams
* Eastman Kodak	Simpson Investment
* Eaton Corporation	The Southland Corporation
Eli Lilly & Company	Tektronix
Exxon	* Tenneco
* Federal Mogul	Thompson Consumer Electronics
* FMC Corporation	TIAA-CREF
* General Dynamics	TRW
# General Motors	UNISYS
Glasrock	* United Technology
Glen Fed, Inc.	Upjohn
Goodyear Tire & Rubber	* US Gypsum
Great Western Bank	US West
Hartmarx	The Walker Group
# Hewlett Packard	Wang Computer
# IBM	* Westinghouse
Ingersoll-Rand	Weyerhaeuser
Kraft Inc. Dairy Group	Whirlpool
Kroger	Xerox

The corporate-level businesses of these firms did not participate in the research

* The corporate-level businesses of these corporations were excluded in studying the consensuality-performance relationship

APPENDIX B:
FUNCTIONAL AND HIERARCHICAL COMPOSITION
OF OVERALL SAMPLE

<u>FUNCTIONAL SPECIALITY</u>	<u>NO. OF RESPONDENTS</u>
General Management	1090
Finance/Accounting	534
Human Resource/Personnel	5976
Manufacturing/Production	774
Marketing/Sales	577
Planning	87
Research & Development	226
Others	1054
<hr/>	
TOTAL	10318

<u>MANAGERIAL LEVEL</u>	<u>NO. OF RESPONDENTS</u>
General Manager	1317
Director of Managers	3188
Manager of Individual Contributors	3110
Individual Contributors	2413
Missing Information	290
<hr/>	
TOTAL	10318

APPENDIX C:
FUNCTIONAL AND HIERARCHICAL COMPOSITION OF
RESPONDENTS INCLUDED IN THIS DISSERTATION

<u>FUNCTIONAL SPECIALITY</u>	<u>NO. OF RESPONDENTS</u>
General Management	1090
Finance/Accounting	534
Human Resource/Personnel	1195
Manufacturing/Production	774
Marketing/Sales	577
Planning	87
Research & Development	226
Others	1054
<hr/>	
TOTAL	5537

<u>MANAGERIAL LEVEL</u>	<u>NO. OF RESPONDENTS</u>
General Manager	1078
Director of Managers	1896
Manager of Individual Contributors	1485
Individual Contributors	828
Missing Information	250
<hr/>	
TOTAL	5537

APPENDIX D

COMPUTATION OF WEIGHTED CONSENSUALITY MEASURES

STEP 1: UNWEIGHTED CONSENSUALITY MEASURES

- a) Unweighted consensuality measures are calculated by the standard deviations of organization members (or TMT members) on individual strategy factors, culture factors, or vision measure.
- b) To facilitate interpretation of consensuality measures (the larger the values, the higher the cognitive consensuality), all unweighted consensuality measures are subtracted from "3". "3" is used because all unweighted consensuality measures are smaller than 3.
- c) The reversed unweighted consensuality measures are standardized (with mean = 0, variance = 1).

STEP 2: WEIGHTING FACTORS: ORGANIZATIONAL EMPHASES ON INDIVIDUAL STRATEGIES, CULTURES, OR VISION

- a) Organizational emphases on individual strategies, cultures, or vision are derived by the aggregated mean of organization members on individual strategies, cultures, or vision.
- b) The aggregated means on individual strategies, cultures, or vision are standardized (with mean = 0, variance = 1).

STEP 3: DERIVATION OF WEIGHTED CONSENSUALITY MEASURES

- a) "5" is added to both the standardized unweighted consensuality measures and the standardized measures of organizational emphases on individual strategies, etc.

The purpose is to change all standardized measures into positive values, with means equal to 5. The transformation is necessary because it is wrong to have a high weighted consensuality measures as a result of the multiplication of two negative standardized measures, i.e., organizations with low unweighted consensuality among members and with very little emphasis on specific strategy, culture or vision.

By transforming all standardized measures into positive values, organizations with high unweighted consensuality and high organizational emphasis on specific strategy, etc. will result in the highest weighted consensuality measures. Organizations either high unweighted consensuality or high organizational emphasis on specific strategy, etc. may result in moderate weighted consensuality measures. Organizations with low unweighted consensuality or little organizational emphasis on specific strategy, etc. will result in lowest weighted consensuality.

- b) Multiplication of transformed standardized consensuality measure and transformed standardized organizational emphasis measure

APPENDIX E
MEASURES OF COMPETITIVE STRATEGIES

Generic Question:

To compete successfully, to what extent does the "participant's business" strategy focus on:
(1 = to very little extent; 5 = to very large extent)

Factor 1: Product Differentiation (alpha = .81)

- * Developing operating technology
- * Developing/refining existing products
- * Differentiating products or services from competitors
- * Entering currently unrelated markets
- * New products or services development
- * Providing specialized products or services
- * Quality of products or services

Factor 2: Marketing Differentiation (alpha = .74)

- * Advertising
- * Brand identification
- * Controlling channels of distribution
- * Innovation in marketing techniques and methods

Factor 3: Cost Competitiveness (alpha = .72)

- * Competitive pricing
- * Cost reduction
- * Operating efficiency

Factor 4: Others (alpha = .38)

- * Improving relationships with customers
- * Managing human resources

APPENDIX F:

MEASURES OF BUSINESS CULTURES

Generic Question:

The following statements describe types of operating values which may exist in the "participant's business". Please indicate the extent to which each statement describes "participant's business." None of the descriptions is any better than others; they are just different.
(1 = to very little extent; 5 = to very large extent)

Factor 1: Group Culture (alpha = .79)

- * Participant's business a very personal place. It is like an extended family. People seem to share a lot of themselves.
- * The glue that holds the participant's business together is loyalty and tradition. Commitment runs high.
- * Participant's business emphasizes human resources. Morale is important.

Factor 2: Development Culture (alpha = .80)

- * Participant's business is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.
- * The glue that holds the participant's business together is commitment to innovation and development. There is an emphasis on being first with products and services.
- * Participant's business emphasizes growth through developing new ideas. Generating new products or services is important.

Factor 3: Hierarchical Culture (alpha = .76)

- * Participant's business is a very formal and structured place. People pay attention to procedures to get things done.
- * The glue that holds the participant's business together is formal rules and policies. Following rules is important.
- * Participant's business emphasizes permanence and stability. Efficiency is important.

Factor 4: Rational Culture (alpha = .77)

- * Participant's business is a very production oriented place. People are concerned with getting the job done.
- * The glue that holds the participant's business together is an emphasis on tasks and goal accomplishment. A production and achievement orientation is shared.
- * Participant's business emphasizes outcomes and achievement. Accomplishing goals is important.

**APPENDIX G:
MEASURES OF ORGANIZATIONAL PERFORMANCE**

1. Throughput Competitiveness (alpha = .85)

Generic question:

How does "participant's business" compare to competitors for each of the following functions or activities?

(1 = much worse; 5 = much better)

- * Computer/management information system
- * Customer buying criteria
- * Customer relations
- * Design product/service
- * Distribution channels
- * Divestitures
- * Financial Management
- * Globalization
- * Government relations
- * Human resource practices
- * Marketing & sales
- * Mergers / acquisition
- * Organizational structure
- * Production capability
- * Research & development

2. Financial Performance

Compared to the major competitors in the "participant's business" in the last three years, how has the "participant's business" performed financially?

(1 = much worse; 5 = much better)

3. Innovativeness

What percent of the sales of "participant's business" is accounted for by products or services introduced in the previous three years?

(1 = less than 5%; 2 = 5-9%; 19 = 90-94%; 20 = 95-100%)

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