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Organizational Cognitive Complexity: Determinants and Consequences.

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ORGANIZATIONAL COGNITIVE COMPLEXITY: DETERMINANTS AND CONSEQUENCES

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ABSTRACT

Marketing strategy formation is a complex process. Strategic decision-making involves participation by multiple organizational members with diverse and sometimes conflicting viewpoints. Beyond the cognitive capacity of individual decision-makers, marketing strategy develops through an emergent process that engages the collective efforts and interpretive capabilities of various representatives of the organization. This study examines the relationships among organizational context, processes, and outcomes. Specifically, organizations are examined as cognitive units stimulated by perceived environmental turbulence, team functional diversity, and an open-minded culture. These factors enhance cognitive complexity, which is the organization's capacity to perceive its environment in a multidimensional way. With greater cognitive complexity, the organization increases its ability to differentiate and integrate various issues during the decision-making process, resulting in more novel and timely strategic marketing action.

CHAPTER 1: INTRODUCTION

Organizations are operating in information environments that are, at times, complex, uncertain, and changing. With burgeoning information technology, increasing returns, and the changing role of intellectual property (Day and Montgomery 1999; Teece 1998), firms need to rely on internal resources to process information better than their rivals (Hunt and Morgan 1995). Knowledge, therefore, has become an asset and a key driver of competitive advantage (Glazer 1991; Teece 1998, Winter 1987). Recent theories of competition emphasize innovation, learning, and speed as primary determinants of organizational success in dynamic environments (Dickson 1992; Hunt and Morgan 1996). The fast, creative learner: (1) fosters a culture open to change and self-improvement, (2) maintains a perspective which is discerning and not hampered by perceptual blinders, and (3) implements strategic actions quicker than rivals (Dickson 1992). In essence, these organizations have developed both effective and efficient learning systems.

This study examines organizations as cognitive units that collectively share information, develop interpretations, and determine actions. The cognitive properties of organizations are examined within the context of the strategic marketing decision-making process. In particular, this study seeks to explain the process by which strategic marketing decisions are made and actions taken by examining how organizations develop an understanding of their environment (e.g., market, competition, and themselves). The central premise of this study is that complexity – in terms of internal diversity – enhances the organization's problem-solving capacity and enables the organization to adapt to its environment. The strategic marketing decision-making

process is complex and unstructured. These decisions require a level of understanding that is enhanced by recognition of a changing environment, an open culture, diversity of expertise, and communication. A high level of understanding, in turn, allows for elaborated decision-making, which stimulates creativity while retaining the capability to implement a fast response.

Theoretical Perspective

This dissertation explores cognition at the organizational level by examining its structure, or breadth. Cognition is defined as "the activity of knowing: the acquisition, organization, and use of knowledge" (Neisser 1976, p. 1). Research in cognition spans a number of disciplines and differs based on the level of theory. In the field of social psychology, research focuses on the individual. Sociologists have argued for the existence of a collective consciousness, whereby a shared level of cognition exists beyond that of the individual. By proposing that organizational cognition has both form and function, organizational theorists have explored this phenomenon at the group level. Research in marketing has concentrated on the content of cognition (e.g., market orientation) and its impact on organizational performance. Table 1 lists those disciplines and areas of research which are key to this study.

Table 1: Key Areas of Cognitive Research

Discipline	Theoretical Contribution	Level of Theory
Social Psychology	Cognitive theory	Individual
Sociology	Collective consciousness	Social
Organizational Theory	Organizational cognition	Organization or group

Social Psychology

Through cognition, individuals make sense of their surroundings. One mechanism for understanding cognition is schema theory. Originally proposed by

Bartlett (1932), schemas serve as a cognitive framework which represent an individual's knowledge about a particular domain and influence what is perceived, interpreted, and retained (Alba and Hasher 1983, Fiske and Taylor 1991; Neisser 1976). Schemas aid in information processing though "top-down, conceptually driven, or theory-driven processes, which simply means processes heavily influenced by one's organized prior knowledge" (Fiske and Taylor 1991, p. 98). In representing organized knowledge about a given domain, schemas facilitate the encoding, storage, and retrieval of information (Alba and Hasher 1983). Schemas determine experience by selecting what information is received and how it is interpreted and utilized and, at the same time, are also shaped by experience (Neisser 1976). As schemas develop, they become more accessible and organized yet more complex. The consequence of schema development and usage is efficient and accurate problem-solving and the ability to attend to inconsistent information (Fiske and Taylor 1991).

In seeking to understand how people make sense of others and themselves, social psychologists have examined the role individual and social factors perform in the development and use of schema. Cognition is examined as a social activity requiring collaboration (Levine, Resnick, and Higgins 1993). One area of particular importance to this research is distributed cognition. With distributed cognition, the unit of analysis is composed of both individuals and their informational environment (Hutchins and Klausen 1996). During group decision-making, individual schemas are brought together to form a shared understanding of the situation, a phenomenon Hutchins and Klausen (1996) refer to as *intersubjective understanding*. This collective schema functions much the same as an individual's schema by selecting what information is

received, how it is interpreted, and what actions are considered - but at the group level (Walsh 1995).

Sociology

Sociologists have long held that cognition exists at some collective level. Nineteenth century sociologist, Emile Durkheim (1895) proposed the concept of collective consciousness while exploring the social origins of individual behavior. Durkheim held that "there are ways of acting, thinking, and feeling which possess the remarkable property of existing outside the consciousness of the individual" (Durkheim, 1895, p. 51). In other words, a collective way of thinking or what today would be referred to as 'shared meanings' or a 'common culture' (Hughes, Martin, and Sharrock 1995). Durkheim discussed this phenomenon in terms of norms, mores, and social expectations (e.g., marriage and other rites of passage). While some argue that Durkheim's collective consciousness did not imply the existence of a group mind, Durkheim does suggest that there are collective properties, which emerge due to the synthesis of individual parts and exceed the sum of its parts (Schmaus 1994). This argument is repeated in Perry's (1922) writing on the social mind. Perry asserts that a society is composed of a unified yet diverse set of minds, which produce collective novelties. These collective novelties are characteristics that are unique to the group and arise from the reciprocal actions and complex relations among its members. Complexity theorists refer to a similar phenomenon, whereby the whole is greater than the sum of its parts, as a theory of emergence (Kauffman 1995).

The concept of collective consciousness is expanded further in the writings of Durkheim's contemporaries. Fleck (1935) extends this theory in what he terms the

thought collective, which is "a community of persons mutually exchanging ideas or maintaining intellectual interaction" (Fleck 1935, p. 38). This view holds that cognition is not an individual process, but rather, is "the result of social activity, since the existing stock of knowledge exceeds the range available to any one individual" (Fleck 1935, p. 38). Modern sociologists continue to explore cognition at the social level. For instance, in the study of culture, schemas are the basic unit of analysis – the aggregation of which forms complex cultural structures (DiMaggio 1997). Culture, therefore, is a supra-individual phenomenon comprised of a network of interrelated schema, which acts to select, diffuse, and modify schemas among individuals.

Organizational Theory

Research in marketing and management on organizational cognition examines how organizations make sense of their environment and themselves. Organizations are viewed as cognitive units that process information, and represent and contain knowledge (Schneider and Angelmar 1993). To adapt to their environment, organizations must interpret their surroundings. Through this interpretive process, information is given meaning and actions are selected (Daft and Weick 1984). Organizational outcomes are a result of the body of knowledge contained within the group and are epistemically distinct from the actions of an individual (Cook and Brown 1999). Weick (1979a) refers to the organization as a body of thought or schema that acts to shape the discovery of the environment. Together, organizational members form a kind of collective schema through which information is obtained, interpreted, and acted upon (Walsh 1995). This collective schema is based upon the interrelations

among organizational members and is drawn upon in that organization's actions (Weick and Roberts 1993).

Organizational schemas are similar to the individual-level concept of schemas but are socially constructed among organizational members (Lyles and Schwenk 1992). Prahalad and Bettis (1986) discuss this phenomenon in terms of *dominant logic*, which is a collection of shared schemas among top management. The dominant logic serves to aid in conceptualizing the business or developing a worldview, which is then used in strategic decision-making. As the complexity of this organizational schema increases, the organization is able to perceive a greater number of opportunities and threats (Lyles and Schwenk 1992) and engages in wider range of responses (Prahalad and Bettis 1986).

Research in the area of strategy and cognition has examined managerial perceptions of their environment and strategy by studying particular organizational strategic schemas (e.g., customer orientation, competitor orientation, technological orientation) (Day and Nedungadi 1994; Deshpande, Farley and Webster 1993; Gatignon and Xuereb 1997; Narver and Slater 1990). These strategic schemas act as schema by selecting and actively modifying experience – in effect, shaping perceptions of competition and strategies (Varadarajan and Jayachandran 1999). Decision-makers utilize these schemas to assess their strengths, weaknesses, and performance relative to their competitors. (Day and Nedungadi 1994). While similarities have been demonstrated among the schemas of decision-makers within the same organization (Hodgkinson and Johnson 1994; Porac et al. 1989), recent research has challenged this assumption of homogeneity (Johnson, Daniels, and Asch 1998) and has begun to

examine the effect of cognitive diversity on strategic behavior (Miller, Burke, and Glick 1998).

The Cognitive Perspective on Strategic Marketing Decision Making

Research on the cognitive perspective of the strategic decision-making process seeks to uncover how organizations come to understand their internal and external environments (Schwenk 1988a, 1995), particularly through the use of schema theory (Lyles and Schwenk 1992; Walsh 1988, 1995). The shared managerial schemas of key decision-makers are a vital factor in strategic actions (Barr 1998; Dijksterhuis, Van den Bosch, and Volberda 1999; Hambrick and Mason 1984; Norburn and Birley 1988; Prahalad and Bettis 1986). Mintzberg, Raisinghani, and Theoret (1976) describe the process of strategic decision-making as:

> characterized by novelty, complexity, and openendedness, by the fact that the organization usually begins with little understanding of the decision situation it faces or the route to its solution, and only a vague idea of what that solution might be and how it will be evaluated when it is developed. (p. 250)

Schwenk (1988b) describes strategic decisions as having three major characteristics: ill-structured/nonroutine, important, and complex. Marketing strategy involves decisions and actions that relate to creating and sustaining a competitive advantage for the firm (Day, Weitz, and Wensley 1990) and entail some element of the marketing mix: product, price, place, and promotion (Cravens, Hills, and Woodruff 1976; Hulbert 1981). Examples of strategic marketing decisions might include: venture into a new market, product, or service; price determination; market expansion/penetration effort; or new advertising campaign.

In examining strategic marketing decision-making, this research follows the bounded rationality model. The rational model holds that decisions are a conscious choice entered into with complete knowledge and an a priori objective as to the set of desired outcomes (Schwenk 1988b). These objectives are based on the decision-makers frame of reference and will act to influence the identification, development, and selection of alternatives (March and Simon 1958). However, the individual's ability to consider all aspects of complex strategic issues exceeds his or her cognitive ability (Cyert and March 1963), and so the decision-maker constructs simplified mental models (March and Simon 1958). In other words, the capacity of individual intellect does not equal the complexity of the situation (i.e., strategic decision). While decision-makers may use objective criteria in determining strategic choice, bounded rationality is still influential (Hitt and Tyler 1991), particularly in regards to the cognitive limitations of strategic decision-makers and the situation's complexity (Eisenhardt and Zbaracki 1992).

In seeking to explain the process by which strategic marketing decisions are made and actions taken, this study examines how organizations develop an understanding of their environment. The organization's internal environment (skills, knowledge, beliefs, and culture) influences strategic decision-making and actions (Varadarajan and Jayachandran 1999). The internal environment, including perceptions of the external environment, also shapes organizational understanding. Due to the complexity of strategic marketing decisions, the means through which marketing strategies are formed requires participation from multiple organizational members and a high level of interfunctional communication (Hutt, Reingen, and Ronchetto 1988).

Through these interactions and shared experiences, organizational members can come to develop a shared understanding of their environment. These collective beliefs influence decision-making, behavior, and strategy formation (Day and Nedungadi 1994).

Research Question and Framework

This research seeks to present and test a theory of organizational cognition, by examining the relationship between organizational thought and strategic marketing processes and outcomes. The central question guiding this research is: how does the organization make sense of its surroundings and implement effective and efficient strategies? In addressing this broad objective, the following more specific research questions will be answered:

- How does the organization develop a more elaborate interpretive system for understanding its environment?
- How does such an elaborate interpretive system impact the strategic marketing decision-making process?
- How does a more elaborate strategic decision-making process impact the effectiveness and efficiency of strategic marketing actions?

By answering these questions, the relationship between organizational environment and the development of organizational level schema is specified. This schema represents the organization's view of the information environment and functions by selecting what information is received, how it is interpreted, and what actions are considered (Day and Nedungadi 1994; Snow, et al. 1986; Walsh 1995). The decision-making process mediates the relationship between understanding and action. Furthermore, this study explores the strategic marketing outcomes of creativity and

response timeliness. The following framework (Figure 1) illustrates the research questions presented above and acts as a guide for this study.

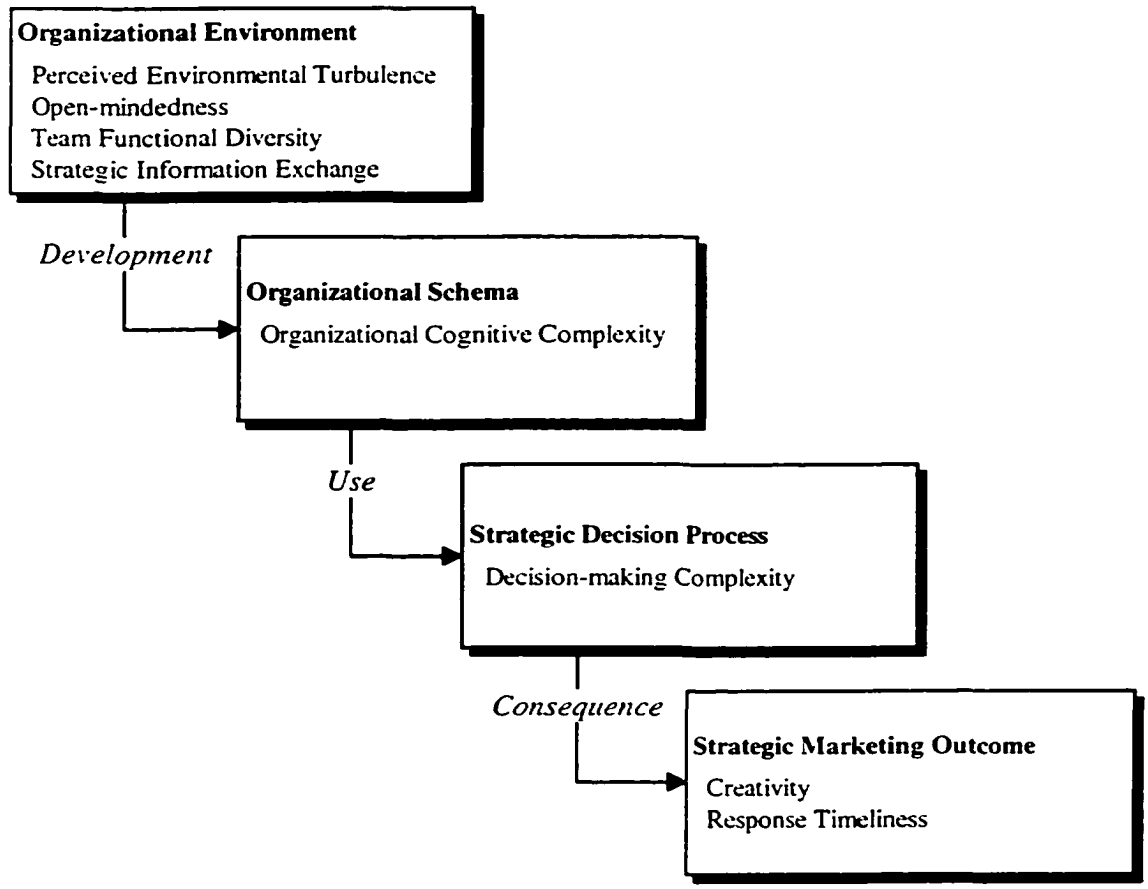

Figure 1: Conceptual Framework

Proposed Methodology

To test this theory, the dissertation relied on structural equation modeling. This technique allows for the simultaneous examination of a series of interrelated dependence relationships. This necessitates obtaining accurate measures of fairly unobservable phenomenon such as organizational culture, beliefs, and information processing. A number of new measures were created for this study, which required adherence to a rigorous methodology for scale development. To control for error in measurement, the measurement aspect is fixed prior to estimating the relationships in

the structural model. This method, recommended by Anderson and Gerbing (1988), avoids the interaction of measurement and structural models. Following this procedure, the internal and external consistency of the latent constructs is examined. Each is assessed for reliability and validity.

The data to be analyzed were gathered by surveying business executives charged with the development and implementation of organization-level strategic marketing decisions. Two studies were undertaken. The first study was conducted to test the psychometric properties of the measures and used MBA students and their associates who hold management level responsibilities. The second study was distributed via mail to respondents within a single industry and used to validate the measures and test the hypotheses. The questionnaire was comprised of a series of statements designed to measure the constructs of interest. Additionally, the questionnaire contains a number of demographic questions that describe the respondent and their organization. These questions were later used to test the quality of the data and the appropriateness of each respondent. The completely standardized path estimates are used to test the model's hypotheses.

Theoretical and Practical Contributions

To fully understand the information environment, organizations must rely upon multiple perspectives (Bartunek, Gordon, and Weathersby 1983; Weick 1979b). Complex decisions require that organizations attend to a multiplicity of internal and external factors. To maintain such a multidimensional focus, organizations must not only design themselves in ways that facilitate the flow of diverse ideas but remain receptive to the insights of others and the elements of a changing environment. By

exploring and testing these issues, this research makes a number of contributions relevant to practitioners. This research should provide managers with new information and direction on how the internal coordinating mechanisms of perceptions of the environment, culture, structure, and communication influence cognitive and decision-making processes, marketing creativity, and speed of marketing response. Managers are dealing with complex issues in a changing environment. To adapt and thrive, they must design themselves so that the complexity of the decision-making team matches the complexity of the situation. Specific issues of importance to managers that are addressed by this research include the following questions:

- How should top management design strategic marketing decision-making teams so as to enhance the organization's ability to form a more complete understanding of its environment?
- What role does a nurturing culture that is receptive to new ideas and differing viewpoints perform in information processing and strategically relevant processes?
- How does the free flow of information and ideas facilitate strategic marketing decision-making?
- Are there tradeoffs of complex decision-making in terms of gains in marketing creativity at the expense of marketing response time?

Varadarajan and Jayachandran (1999) propose that the fundamental issue for researchers in the field of marketing strategy is to understand and explain "firm behavior in the realm of deployment of marketing resources for competitive advantage and its contextual underpinnings" (p. 140). The authors discuss a particular need for more research focusing on strategy formulation and implementation and the influence of organizational and managerial cognition on these processes. Prior research has begun to uncover the organizational and managerial factors and processes involved in formulating and implementing marketing plans (Frankwick et al. 1994; Hutt, Reingen,

and Ronchetto 1988; Menon et al. 1999; Moorman and Miner 1998a; Noble and Mokwa 1999). As a contribution to the marketing literature, this research explores and empirically tests contemporary theory through the examination of organizations as cognitive entities in the context of marketing strategy formulation and implementation. In doing so, the dissertation examines the relationship among organizational context, processes, and outcomes.

This dissertation explores the development of complex cognition and its impact on the decision-making process. This study is among the first in marketing to examine interpretation issues in the context of their effect on efficiency (e.g., marketing response time) and effectiveness (e.g., marketing creativity). This study also develops measures of cognitive and decision-making complexity as well as measures of external (macroenvironment) and internal (product) orientation. The research contributes by integrating theories in social psychology, sociology, management, and marketing. Additionally, this research extends the examination of the relationship between cognitive group processes and knowledge management (Madhavan and Grover 1998). The study of cognition and strategic decision-making aids in developing an understanding as to the processes by which organizations make sense of the environment and themselves.

CHAPTER 2: REVIEW OF THE LITERATURE

This chapter begins by discussing organizations as interpretive systems that develop a shared understanding of the information environment based on the interaction of its members. Next, the theoretical foundation for the existence of organizational cognitive complexity is presented. The last section presents the determinants and consequences of organizational cognitive complexity as a series of hypotheses with the supporting literature for each.

Organizations as Interpretive Systems

The organization is perceived as a *body of schemata* based on its participants' interactive perception of both knowledge and the environment (Weick 1979a). The basic raw material of organizational communication and action is information about the organization's environment (Huber and Daft 1987). Information inputs are often ambiguous and uncertain; and thus, the function of organizing becomes the reduction of equivocality (Weick 1979a). Viewed as information processing systems (Galbraith 1974; Tushman and Nadler 1978), organizations achieve collective action through the acquisition, sharing, interpretation, and storing of information (Daft and Huber 1987; Huber 1991). Each component within the organization performs a unique information processing function (Streufert and Swezey 1986).

When information is uncertain, organizations must coordinate their behavior in order for collective actions to achieve collective outcomes (c.f. Hutchins 1991). Due to the complexity of strategic marketing decision-making, the means through which strategy is formed requires participation from multiple individuals with diverse knowledge, skills, and values (Hutt, Reingen, and Ronchetto 1988; Madhavan and

Grover 1998; Mintzberg 1990). Through interactions and shared experiences, organizational members come to develop a shared understanding of their environment. These collective beliefs, in turn, influence their interpretation of how the organization can succeed (Barr 1998; Daft and Weick 1984). This interpretation then guides strategic action (Barr 1998; Day and Nedungadi 1994; Hambrick and Mason 1984).

Organizational coordination is a communication-dependent process performing an indispensable role in achieving collective outcomes (Duncan and Moriarty 1998). Through communication, the organization learns, which enables environmental adaptation (Daft and Huber 1987). Organizational learning is defined as the collective processing of information in which members develop more elaborate shared schemas. The outcome of organizational learning is an increase in the range of potential behaviors (Huber 1991; Sinkula 1994). Organizations that hold more varied interpretations of their surroundings attain higher levels of learning and a greater range of behaviors and are, therefore, more adaptive (Fiol and Lyles 1985; Huber 1991; Weick 1995).

Interpretation is defined as "the process of translating events and developing shared understanding and conceptual schemes among members of upper management" (Daft and Weick 1984, p. 286). Schemas influence interpretation by acting as information-seeking structures that accept information and guide action (Neisser 1976), whether at the individual or collective level (Snow, et al. 1986; Walsh 1995). Managerial schemas, or frames of reference, function by imposing order on experience and influencing the collection and interpretation of information and subsequent decision-making (Day 1994; Day and Nedungadi 1994; Shrivastava 1985; Shrivastava

and Mitroff 1983). In essence, these schemas provide form to the organization's information environment.

At the organizational level, interpretation involves the mingling of schemata (Daft and Weick 1984; Lyles and Schwenk 1992; Prahalad and Bettis 1986; Shrivastava and Schneider 1984; Walsh and Fahey 1986). The subsequent learning and action that result from the intermingling and interacting of individuals takes on collective properties which are unique and potentially beyond the range of the individual (Perry 1922; Weick and Roberts 1993). While organizational action does not require that members hold identical interpretations of the environment (Donnellon, Gray, and Bougon 1986), Fiol (1994) argues that a "convergence around a broad frame of interpretations" provides "the common understanding needed to move toward collective action despite the persistence of divergent content of interpretations" (p. 197). Achieving cooperative outcomes does not require a high degree of consensus as to the meaning of information but an appreciation for differing perspectives. The means by which organizations achieve collective action – despite interpretive differences – is through communication (Donnellon, Gray, and Bougon 1986). It is through this communicative interaction that members are able to construct a shared understanding of a particular situation (Hutchins and Klausen 1996) and transcend interpretive differences (Donnellon, Gray, and Bougon 1986).

Organizational Cognitive Complexity

According to Ashby's (1956) Law of Requisite Variety, for a system to adapt to its environment, its internal variety must match that of its environment. Using an analogy to the human brain, Conant and Ashby (1970) state that for the brain to adapt in

both an effective and efficient manner it must learn by forming a model (or models) of its environment. Whether the unit of analysis is the individual, group, or organization, the greater the variety and integration of the unit's parts (e.g., ideas, roles, skills, knowledge), the more environmental stimuli is processed and the greater the variety of decisions and behaviors (Driver and Streufert 1969; Schroder, Driver, and Streufert 1967). As stated by Weick (1995), "... it takes a complex sensing system to register and regulate a complex object" (p. 34-5).

In order to interpret the environment, organizations employ multiple, competing schema (Anderson 1999). To cope with a complex environment, organizations can either *reduce* their understanding into a single representation or they can *absorb* the variety by holding multiple and possibly conflicting interpretations (Boisot and Child 1999). However, superior performance often requires a complete understanding of the environment using multiple perspectives (Boisot and Child 1999; Dickson 1992). Those organizations that are able to maintain a broad strategic framework for interpreting their environment - thereby matching the variety of the environment - are capable of forming a more complete understanding (Milliken and Martins 1996) and are less likely to generalize (Boisot and Child 1999). This should enhance decision-making and lead to an increased ability to implement an effective response (i.e., adapt) (Bartunek, Gordon, and Weathersby 1983; Boisot and Child 1999; Fiol 1994; Lyles and Schwenk 1992; Sandelands and Stablein 1987; Walsh 1995; Weick 1995).

The Strategy-Cognition Link

Past research has proposed linkages between organizational cognition and strategic decision processes, particularly those of key decision-makers (Barr 1998; Daft

and Weick 1984). Changes in strategic action are based on the interpretation of top managers (Barr 1998, Hambrick and Mason 1984; Hitt and Tyler 1991; Norburn and Birley 1988). The individual schemas of top managers have a direct influence on the organization's knowledge structure (Lyles and Schwenk 1992). Just as a schema serves to choose what information is selected, encoded, stored, and retrieved, strategy gives meaning, purpose and direction to the organization. Strategy functions as a framework for interpretation that guides the generating, gathering, disseminating, and interpreting information (Westley 1990). The organization may maintain a variety of strategic orientations which compete for resources with some orientations being retained as organizational understanding (Burgelman 1991). In this study, strategy is explored as strategic decision-making (c.f., Eisenhardt 1999) by examining the development and use of complex, organizational schema.

Specifying the Domain of the Construct

Organizational cognitive complexity is the organization's capacity to construe its environment in a multidimensional way (Streufert and Swezey 1986). Research has long applied the notion of cognitive complexity to the individual measuring their ability to differentiate, discriminate, and integrate among stimuli (Bieri 1955; Kelly 1955; Schroder, Driver, and Streufert 1967). Organizational cognitive complexity measures the variety in an organization's core set of schemas, which is a representation of its goals and beliefs. This set, in turn, enables an understanding of the organization's purpose and mission and its ability to respond to environmental opportunities and threats (Lyles and Schwenk 1992).

A more cognitively complex organization has available a more differentiated set of dimensions for perceiving the environment than does a less cognitively complex organization. The cognitively complex organization is capable of differentiating (retaining multiple, seemingly independent strategic orientations) and integrating (relating the relative demands of differentiated strategic orientations) their information environment (Streufert and Swezey 1986). Such organizations function on the basis of multiple strategic orientations, while a less cognitively complex organization would function based on few or single orientations (Streufert and Swezey 1986). Additionally, those organizations with simple structures are not likely to recognize shifts in the environment and tend to overlook them (Walsh and Fahey 1986). Therefore, organizations that understand a multitude of environmental issues and their relation to the organization are more cognitively diverse (Miller, Burke, and Glick 1998).

When making a decision, there are a wide variety of internal and external environmental factors for decision-making units to consider (Duncan 1972). Decision-makers are often selective in what environmental information they will process. Hambrick (1982) argued that decision-makers scan the information environment based upon their competitive strategies. Strategic choice is reflected in the schema of decision-makers (Finkelstein and Hambrick 1996). A particular strategic orientation is an indicator of which salient environmental aspect the organization believes will lead to a competitive advantage (Day and Nedungadi 1994). Various dimensions of the environment have been proposed as a reflection of strategic orientation aimed at achieving organizational goals.

The environment is comprised of two broad areas: the microenvironment and the macroenvironment (e.g., Armstrong and Kotler 2000). The microenvironment is those forces close to the company which directly affect the firm's ability to create and sustain a competitive advantage. The macroenvironment is a broader set of forces that affect the microenvironment - social, demographic, technological, economic, political, and legal. Several studies have examined aspects of the microenvironment, particularly customer and/or competitor orientations in strategic marketing decision-making (Day 1994; Day and Nedungadi 1994; Day and Wensley 1988; Deshpande, Farley, and Webster 1993; Narver and Slater 1990). Research in marketing has also examined the effects of product orientation on strategic factors and organizational performance, particularly in the areas of quality (Jacobson and Aaker 1987; Morgan and Piercy 1998; Parasuraman, Zeithaml, and Berry 1985) and efficiency (Piercy 1998; Wright et al. 1991). Researchers have also begun to examine the relationship between macroenvironment orientation and strategic marketing actions and outcomes, particularly in the area of macroenvironmental knowledge (Andrews and Smith 1996) and technological orientation (Gatignon and Xuereb 1997). While there are other issues involved in strategic decision-making, these are more derivative in nature (e.g., administrative, financial, or suppliers). The customer, competitor, product, and macroenvironment orientations have all independently been examined within the realm of strategic marketing decision-making and planning and as sources of competitive advantage.

As stated above, a cognitively complex organization functions on the basis of multiple strategic orientations, while a less cognitively complex organization operates

with few or even a single orientations. The extent of complexity is gauged in terms of the diversity of strategic orientations both in the microenvironment (competitor, customer, and product) and the macroenvironment (see Table 2). This dissertation examines the structure of strategic orientations by examining the breadth of the perspectives (for a recent study examining content issue, see Nutt 1998a).

Table 2: Strategic Orientation

Strategic Orientation	Definition
Customer	Consideration of and emphasis on target buyers
Competitor	Consideration of and emphasis on current and potential competitors
Macroenvironmental	Consideration of and emphasis on issues and trends outside of the organization's immediate industry
Product	Consideration of and emphasis on the efficiency and quality of the organization's product

Determinants and Consequences of Organizational Cognitive Complexity

The organization's capacity to hold multiple perspectives during strategic decision-making is influenced by the organizational environment (i.e., perceptions, values, structure, and processes). Specifically, this study proposes that the following lead to organizational cognitive complexity: 1) perceived environmental turbulence – acting as the impetus for collective information processing; 2) open-mindedness – an organizational value promoting cognitive flexibility; 3) team functional diversity – the extent to which multiple perspectives are included in strategic decision-making; and 4) strategic information exchange – the dispersion of the raw material (i.e., information) for decision-making. These contextual factors are modeled as predictors of organizational cognitive complexity. Decision processes act as an intervening factor linking organizational cognition and strategic action. Figure 2 illustrates the determinants and consequences of organizational cognitive complexity.

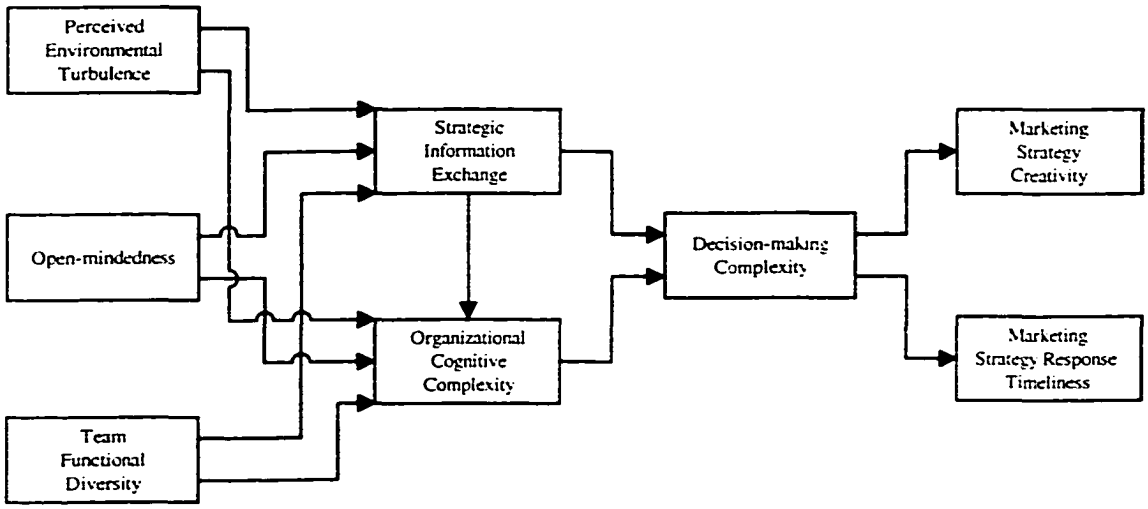

Figure 2: Determinants and Consequences of Organizational Cognitive Complexity

Determinants of Organizational Cognitive Complexity

Perceived Environmental Turbulence. The role of decision-making becomes increasingly more uncertain and demanding as organizations find that they must compete in turbulent environments (Achrol and Stern 1988; Glazer and Weiss 1993). The environment does not directly determine organizational action, but rather it is the evaluation of the environment by key decision-makers that controls organizational response (Huber and Daft 1987). This perception forms the *enactable environment*, which is the source of variation in interpretation and action (Weick 1979b). As decision-makers perceive environmental conditions as changing, their choice of organizational goals or objectives is influenced (Child 1972). Environmental turbulence is a function of instability (frequency of change) and randomness (unpredictability of both frequency and direction of change) (Huber and Daft 1987). Generally, the impact of turbulence on the organization has been examined in terms of changes in consumer preferences (market turbulence) or industry technological

standards (technological turbulence) (Han, Kim, and Srivastava 1998; Kohli and Jaworski 1993; Slater and Narver 1994).

Organizational information processes are structured in response to the information demands of the environment (Tushman and Nadler 1978). Information-intensive environments require that organizations design themselves to compete based on knowledge accumulation and deployment (Bettis and Hitt 1995). Prior research has argued for a positive relationship between increasing environmental turbulence and organizational information processing (Huber and Daft 1987; Sinkula 1994). In particular, the need for information processing increases with increasing environmental turbulence (Gupta Raj, and Wilemon 1986; Tushman and Nadler 1978), as does the level of information exchange (Huber and Daft 1987; Menon and Varadarajan 1992; Daft and Lengel 1986).

In order to respond to the environment, decision-makers must identify and define the information environment (Duncan and Weiss 1979). The level of complexity in an organization's schema is due, in part, to the interpretation of environmental events (Lyles and Schwenk 1992). In an environment perceived as fast-changing, decision-makers are forced "to structure their cognitive maps and to form their theories regarding which strategies will succeed" (Bourgeois and Eisenhardt 1988, p. 827). These perceptions of environmental events act to influence the complexity of an organization's schema (Driver and Streufert 1969; Lyles and Schwenk 1992; Streufert and Swezey 1986). Thus:

> H_1: The greater the perceived environmental turbulence, the greater the a) strategic information exchange and b) organizational cognitive complexity.

Open-mindedness. Culture functions by imposing coherence and meaning on the organization and its members (Weick 1985). Deshpande and Webster (1989) define culture as "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them norms for behavior in the organization" (p. 4). To analyze the effects of organizational culture, researchers have often relied on measures of shared values (Wiener 1988). A cultural value closely associated with a learning culture is open-mindedness. While familiar approaches to problems and their solutions might have proven successful in the past, open-minded organizational cultures are more likely to question long-held practices and beliefs. (Sinkula, Baker, and Noordewier 1997).

Culture performs an important role in the processing and management of information (Brown and Starkey 1994). The relationship between culture and organizational information processes has been examined as learning orientation (Baker and Sinkula 1999; Sinkula, Baker, and Noordewier 1997), information sharing norms (Fisher, Maltz, and Jaworski 1997), market orientation (Slater and Narver 1995), competing values (Moorman 1995), and information culture (Menon and Varadarajan 1992). Processing market information requires a learning orientation that is marked by commitment to learning, open-mindedness, and shared vision (Sinkula, Baker, and Noordewier 1997). Open-mindedness creates an organizational environment that is receptive to emerging possibilities and encourages the sharing of strategic information among decision-makers (Day 1994).

The diversity of schema that decision-makers can maintain is partly determined by their attitude toward learning (Prahalad and Bettis 1986). Consideration of diverse

perspectives requires some degree of trust and openness (Boisot and Child 1999; Prahalad and Bettis 1986; Streufert and Swezey 1986). Organizations that demonstrate a willingness to question current thinking and practices are more likely to consider differing perspectives and environmental forces. Open-mindedness, as an organizational value, fosters information sharing and a willingness to integrate diverse perspectives. Thus:

> H_2: The greater an organization's open-mindedness, the greater its a) strategic information exchange and b) organizational cognitive complexity.

Team Functional Diversity. Strategic decision-makers define the organization (Finkelstein and Hambrick 1996) and interpret its environment (Daft and Weick 1984). Decision-makers display a tendency to interpret situations as they relate to their own functional backgrounds and goals (Dearborn and Simon 1958; Frankwick, et al. 1994; Hambrick and Mason 1984; Hitt and Tyler 1991; Waller, Huber and Glick 1995). Team functional diversity, as measured by the breadth of occupational specialties involved in strategic decision-making, identifies the heterogeneity of knowledge and expertise within the group. Hage and Aiken (1970) refer to this as the degree of organizational complexity. Functional diversity enhances problem solving by increasing the range of perspectives, skills, and knowledge (Collins, Hage, and Hull 1988; Hambrick, Cho, and Chen 1996; Finkelstein and Hambrick 1996; Jehn, Northcraft, and Neale 1999; Milliken and Martins 1996; Williams and O'Reilly 1997; Zaltman, Duncan, and Holbek 1973). While functional diversity is expected to enhance decision-making and performance, empirical results have been mixed (Milliken and Martins 1996). The differences in findings may be due to the nature of the task, as recent research has demonstrated that

the level of task complexity moderates the workgroup diversity-performance relationship (Jehn, Northcraft, and Neale 1999).

When faced with a complex situation, decision-makers tend to rely on their functional expertise to interpret and decide on a course of action (Finkelstein and Hambrick 1996). Functional diversity leads to differences in viewpoints relating to the group's task, which in turn produce positive task-related performance (Pelled 1996; Pelled, Eisenhardt, and Xin 1999). In essence, the internal perspectives begin to mirror the complexities of the external environment. This diversity of perspectives encourages debate and the flow of ideas (Collins, Hage, and Hull 1988). As the number of functional specialties increases, communication with other functional areas (Ancona and Caldwell 1992) and within the decision-making group becomes more frequent (Glick, Miller, and Huber, 1993; Hage, Aiken, and Marrett 1971).

The variety of perspectives that a decision-making team can maintain is dependent on the composition of the group (Prahalad and Bettis 1986). Team heterogeneity "enhances the breadth of perspective, cognitive resources, and overall problem-solving capacity of the group" (Hambrick, Cho, and Chen 1996, p. 662). As groups become more heterogeneous in terms of the number of functional specialization represented, the breadth of perspectives is enhanced (Finkelstein and Hambrick 1996; Glick, Miller, and Huber 1993; Hambrick, Cho, and Chen 1996; Milliken and Martins 1996; Pelled, Eisenhardt, and Xin 1999; Wiersema and Bantel 1992). Thus:

> H_3: The greater the strategic decision-making team's functional diversity, the greater the a) strategic information exchange and b) organizational cognitive complexity.

Strategic Information Exchange. Strategic information exchange is the extent to which relevant information is shared among all members of the decision-making team.

Communication allows for the functioning of the organization and is an important aspect of organizational learning (Daft and Huber 1987). To achieve effective outcomes, organizations must develop collaborative mechanisms that bridge the gap between functional departments and allow for the free-flow of ideas (Adams, Day, and Dougherty 1998; Dougherty 1992). Organizations achieve this through communication, which serves the function of coordinating collective decisions (Donnellon, Gray, and Bougon 1986; Hutchins and Klausen 1996). Collaborative dialogue enhances interfunctional outcomes (Fisher, Maltz, and Jaworski 1997; Gupta, Raj, and Wilemon 1986; Ruekert and Walker 1987).

For there to be sufficient exposure to diverse issues, information must be disbursed among organizational members. Communication allows information to be seen in a broader context, specifically by individuals who might use or be influenced by it (Slater and Narver 1995). The result of communication does not necessitate a single interpretation for the group, but rather is a mechanism allowing for organized action despite differences in interpretations (Donnellon, Gray, and Bougon 1986). Communication creates an environment favorable to diverse ideas while still achieving collective action. Extensive communication is key to integrating differentiated perspectives or ideas toward some shared understanding (Streufert and Swezey 1986).

Communication is evident during all phases of strategic decision-making (Mintzberg, Raisinghani, and Theoret 1976). A high level of communication is required in the formation of marketing strategy (Hutt, Reingen, and Ronchetto 1988). Bourgeois and Eisenhardt (1988) reveal that organizations engaging in more complex decision-making are characterized with greater information sharing among decision-

makers. Organizations that share and exchange ideas engage in more elaborated marketing strategy-making (Menon et al. 1999). Thus:

> H_4: The greater the organizational strategic information exchange, the greater the a) organizational cognitive complexity b) decision-making complexity.

Consequences of Organizational Cognitive Complexity

Decision-making Complexity. The strategic decision-making process engages multiple participants representing different points-of-view. Deciding on a course of action involves a mingling of perspectives (Frankwick et al. 1994; Walsh and Fahey 1986). This mingling of perspectives forms an organizational frame of reference that directly affects strategic decision-making (Shrivastava and Schneider 1984). Miller, Burke, and Glick (1998) argue that cognitive diversity among top-management leads to disagreement concerning their beliefs and goal preferences. This disagreement serves to reduce cohesion and intensify efforts towards resolving disagreement, which, in turn, leads to more exhaustive decision-making. However, the authors contend that this same diversity may lead to conflict and a breakdown in communication.

At an individual level of analysis, researchers have explored whether managers with greater cognitive complexity are aware of more alternatives and are able to differentiate between a larger number of dimensions (Finkelstein and Hambrick 1996). Cognitively complex managers have been shown to have accelerated cognitive processing through their ability to simultaneous evaluate alternatives (Wally and Baum 1994). While Hitt and Tyler (1991) did not find support for individual cognitive complexity's impact on strategic decision-making, the authors do not reject the importance of cognitive complexity and have called for more research that accurately depicts the relationship.

As various perspectives come to be represented during decisions, more problems are identified, more alternatives are formulated, and more criteria for evaluating solutions are used. Less cognitively complex organizations perceive fewer relevant dimensions and apply simple rules in making decisions. As an organization gains the capacity to interpret its internal and external environment in a multidimensional way, the breadth of their decision-making processes increases (Finkelstein and Hambrick 1996; Lyles and Schwenk 1992; Streufert and Swezey 1986). Thus:

> H_5: The more cognitively complex the organization, the greater decision-making complexity.

Marketing Strategy Creativity and Response Timeliness. Decision-making processes act as an intervening factor between organizational cognition and behavior (Miller, Burke, and Glick 1998). Prior research has examined the link between extensive decision processes and organizational performance outcomes (Bourgeois and Eisenhardt 1988; Fredrickson 1984; Fredrickson and Mitchell 1984; Fredrickson and Iaquinto 1989; Glick, Miller, and Huber 1993; McKee, Varadarajan, and Vassar 1990; Menon et al. 1999; Miller, Burke, and Glick 1998). Organizations that are able to share and integrate multiple perspectives respond to their environment more effectively (Bartunek, Gordon, and Weathersby 1983) and creatively (Moorman and Miner 1997; Streufert and Satish 1997; Streufert and Swezey 1986). Criticism of elaborated decision-making focuses on the cognitive limitation of individuals to engage in exhaustive decision-making, the inability to integrate inconsistent decisions, and the level of environmental stability (Fredrickson 1984).

The case data presented by Bourgeois and Eisenhardt (1989) illustrate that organizations that engage in comprehensive decision-making consider more innovative

solutions. Engaging in more analytic and extensive decision-making encourages deviations from more habitual responses (Amabile 1988, Andrews and Smith 1996; Menon et al. 1999).

There is some disagreement as to the effect of complex schemas on the speed of response. In examining individuals, the social psychology literature suggests that as schemas develop and become more complex, they are more accessible and organized, which serve to speed problem solving (Fiske and Taylor 1991). At the organizational level, some argue that cognitively complex organizations have slower response times (Streufert and Satish 1997). For instance, Nutt (1998b) revealed that increases in decision complexity (i.e., the number of alternatives considered and criteria applied) led to increases in implementation time. However contrary to Nutt's findings, Eisenhardt (1989) observed that effective decision-making in rapidly changing environments was accomplished through simultaneous consideration of a greater number of alternatives rather than through sequential analysis of fewer alternatives in greater depth. This same link between comprehensive strategic decision processes and swift, bold, and appropriate action has been demonstrated in other studies (Bourgeois and Eisenhardt 1988; Judge and Miller 1991; Prahalad and Bettis 1986; Wally and Baum 1994). Consistent with this research, the present study argues that more novel and timely marketing strategy occurs with greater complexity in decision-making. Thus:

> H_6: The greater the decision-making complexity, a) the more creative the marketing strategy and b) the more timely the marketing strategy response.

Summary of Hypotheses

By testing these hypotheses, the relationship between organizational environment and the development of organizational understanding is examined. The

hypotheses further test the relationship between understanding and action, which is mediated by the strategic decision-making process. Furthermore, this study explores the efficiency and effectiveness of strategic marketing response by examining of the level of creativity and response timeliness. Table 3 provides a summary of the hypothesized relationships.

Table 3: Summary of Hypotheses

	Endogenous Variables				
	Strategic Information Exchange	Organizational Cognitive Complexity	Decision-making Complexity	Marketing Strategy Creativity	Marketing Strategy Response Timeliness
Team Functional Diversity	+	+			
Perceived Environmental Turbulence	+	+			
Open-mindedness	+	+			
Strategic Information Exchange		+			
Organizational Cognitive Complexity			+		
Decision-making Complexity				+	+

CHAPTER 3: RESEARCH METHODOLOGY

Chapter 1 presented the conceptual framework and outlined the study's theoretical perspective, purpose, methodology, and contributions. Chapter 2 discussed organizations as cognitive units, introduced the concept of organizational cognitive complexity, and developed the theoretical support for the study's hypotheses. To test this theory and the respective hypotheses, two studies were undertaken. This chapter details the research method to be employed in those two studies. Specifically, this chapter addresses sampling considerations, discusses the proposed measures, and details the steps in data analysis.

Data Collection

To achieve the study's purpose of developing and testing the relationships among organizational contexts, processes, and outcomes, a cross-sectional survey was conducted. For each organization, the data was collected from an appropriate individual who reported on the strategic decision-making processes within an organization. The survey was self-administered in both studies. To aid the response rate, recommended procedures were followed in the design and distribution of the survey instrument.

Study One

The first round of data collection is collected as an initial analysis of the reliability and validity of the study's measures. A convenience sample is used. However, several steps are taken to ensure that the sample does not misrepresent the focal population. Since the study involves strategic marketing decisions, MBA and Executive MBA students from four sections of a marketing management course are deemed appropriate for this preliminary analysis. Each student is requested to ask one

individual whom they know to hold organizational level responsibility to participate. To be included in the study, each informant must have at least moderate involvement in strategic planning decisions. In designing the questionnaire, the items are kept short and easy to comprehend (see Appendix A). Also, several experts in survey research reviewed the questionnaire prior to its distribution.

Study Two

Sample Element. The sample consists of key informants from separate organizations. Since this research analyzes strategic marketing decisions at the organizational level, the respondents were instructed to focus on the organization as a whole, rather than just their personal involvement. Additionally, each respondent needed to be a member of the marketing strategy-making team, have considerable involvement in strategic planning decisions, and have sufficient organizational knowledge. While concerns have been raised about relying on single informants (Phillips 1981), recent research on the formulation and implementation of marketing strategy continues to rely on single informants (Day and Nedungadi 1994; Menon et al. 1999).

The primary concern of relying on single individuals is that biases are introduced based on the selective perception of the informants, particularly when informants are asked to make subjective judgements (Phillips 1981). However, research on organizational cognition has demonstrated consistent results when analyzing a single top-level executive versus aggregating group perceptions (Miller, Burke, and Glick 1998). Similarly, Hage and Dewar (1973) found consistent results when measuring the values of a top-executive compared to the aggregation of

organizational members actively involved in strategic decisions. However, it should be noted that the Hage and Dewar study was based on a small sample.

Researchers advocate that studies relying on key informants should make a strong effort to identify respondents who are knowledgeable about the organization and the situation under investigation (Huber and Power 1985; Kumar, Stern, and Anderson 1993; Phillips 1981). To verify the choice of the appropriate respondent, this study used a number of methods to assess informant competency. A person knowledgeable of the organization's strategic planning issues was sought by instructing that the respondent needed to have organization-wide responsibilities and be actively involved in the formulation and implementation of strategic marketing decisions. Additionally, the individual needed to have a sufficient number of years of experience working for the organization. Several empirical checks were performed to ensure that only qualified respondents are included in the analysis.

Sample Frame. To remove any industry-specific effects, the sampling frame is drawn from a single industry. Three industry associations – distribution, banking, and software and information - were notified and asked if they would be willing to take part in a study on marketing strategies. The distribution and software and information associations expressed an interest, but only the distribution association had a large enough membership base for this study. The National Association of Wholesaler-Distributors' research arm, the Distribution Research and Education Foundation, sent letters to its approximately 110 member associations which collectively represent over 60,000 members. A number of these member associations volunteered, but only three had a sufficient membership base to warrant inclusion in the study. These were the

Beauty and Barbara Supply Institute (BBSI), Independent Medical Distributors Association (IMDA), and National Association of Electrical Distributors (NAED). These three associations represent 1,055 domestic distributors (BBSI = 337, IMDA = 99, and NAED = 619).

Due to the requirements of the methodology, the sample needed to be large enough to both purify the measures and fully test the model. A critical sample size of 200 is recommended (Hair et al. 1998). Structural equation modeling (SEM) requires large sample sizes in order for there to be some confidence that the model is truly identified. The more complex the model, the larger the sample size requirement necessary to achieve adequate assessment of parameter significance and model fit indices based on chi-square (Raykov and Widaman 1995). A ratio of five observations per parameter estimate is recommended (Bentler and Chou 1987). After measurement purification, the sample size needed to fully test the model was estimated to be 400.

Survey Design and Administration. In designing and administering the survey, the Total Design Method (TDM) is followed (Dillman 1978). This method has been demonstrated to enhance response rate, consistently achieving rates greater than fifty-percent. A strong effort was made to keep the questionnaire items short, simple, and straightforward. Negatively worded items were not used. Items were grouped according to the construct each measured. The questionnaire was printed as a booklet on white paper. No questions were printed on the front or back cover, and the instructions appeared on the inside cover (see Appendix B). While each questionnaire had an identifying number for mailing purposes, respondents were assured that all information would be kept strictly confidential. The final questionnaire was pretested

using three top-level managers who worked in a distribution firm. Based on these comments, only minor formatting changes were necessary.

A number of data collection techniques were employed to increase the number of returns. Recommended techniques include university sponsorship, salience, follow-up, return envelope, and incentive offer (Fox, Crask, and Kim 1988; Roth and BeVier 1998; Yammarino, Skinner, and Childers 1991). Each mailing included a personally signed cover letter on university letterhead, a four-page booklet, and a postage-paid, return envelope. The cover letter explained the study's purpose, encouraged cooperation, and ensured confidentiality (see Appendix C). The first round was mailed to 1,055 distributors. One weeks later, a postcard was mailed reminding respondents of the questionnaire and requesting their participation. Two weeks following the postcard, a second mailing of 893 surveys was sent to nonrespondents. As an added incentive, each was invited to include a business card if they wished to receive a summary of the findings for their own benchmarking purposes.

Proposed Measures

The model contains twelve constructs for which measurement scales were used. Indicators from existing scales were used where possible. However, a few of the constructs have not been previously measured and therefore required the development of new scales and items. Six of the measures have been validated from previous research. Two scales have been adapted to accommodate the study's intentions. To test the theory, three new measures have been developed for this study. Table 4 contains the initial number of items for each construct and the source of the measure. Each item also appears in Appendix D.

Table 4: Summary of Measures

Construct	Initial # Items	Source
Validated Measures		
Competitor Orientation	4	Narver and Slater 1990
Customer Orientation	6	Narver and Slater 1990
Market Turbulence	5	Jaworski and Kohli 1993
Marketing Strategy Creativity	5	Menon et al. 1999
Open-mindedness	6	Baker and Sinkula 1999
Team Functional Diversity	9	Hambrick, Cho, and Chen 1996
Technological Turbulence	4	Jaworski and Kohli 1993
Adapted Measures		
Marketing Strategy Response Timeliness	8	Jaworski and Kohli 1993
Strategic Information Exchange	13	Jaworski and Kohli 1993; Moorman 1995
New Measures		
Decision-making Complexity	19	
Macroenvironmental Orientation	9	
Product Orientation	6	

Perceived Environmental Turbulence

Environmental turbulence is the perceived instability and randomness in the external environment (Huber and Daft 1987). This dissertation examines two sources of turbulence: market and technological. Market turbulence examines shifts in the firm's microenvironment. Specifically, the measure gauges the extent to which the organization perceives the composition and preferences of its customers as changing over time (Jaworski and Kohli 1993). Technological turbulence captures perceptions of change in one aspect of the firm's macroenvironment by gauging the extent to which an industry's technology is perceived to be changing (Jaworski and Kohli 1993). Both measures are based on validated scales. Both the five-item market turbulence and four-item technological turbulence construct are evaluated on seven-point scales ranging from "strongly disagree" to "strongly agree."

Open-mindedness

Open-mindedness, an organizational value, is receptive to new and possibly different ideas. The construct is evaluated using a six-item measure developed by Baker and Sinkula (1999). In their study, open-mindedness is one of three dimensions of a learning orientation. This study, however, focuses on the cultural value of open-mindedness. The items are evaluated using seven-point "strongly disagree" to "strongly agree" scales.

Team Functional Diversity

Team functional diversity reflects the different knowledge bases and perspectives that members bring to a strategic decision-making group. The functional background of each team member represents "... their implicit causal models, vocabularies, and internal and external networks" (Hambrick, Cho, and Chen 1996, p. 672). Each of the measure's nine items represents a functional background (see Appendix D) and is based on the categories used in a study by Hambrick, Cho, and Chen (1996). The key informant is instructed to indicate the number of organizational members from each functional group who participate in strategic decisions. As the variables are categorical, an entropy-based index, recommended by Teachman (1980), was created to measure the level of diversity. This index has been used by a number of other diversity researchers (Ancona, and Caldwell 1992; Jehn, Northcraft, and Neale 1999; Pelled, Eisenhardt, and Xin 1999). The equation is defined as follows:

$$Team\ Functional\ Diversity = -\sum P_i(\ln P_i)$$

where P_i = the proportion of team members assigned to each functional area.

The index is based on the sum of the products of each functional area's proportion in the strategic decision-making team and the natural log of its proportion. If a functional area is not represented, the area is assigned a value of '0'. The index indicates how functional expertise is distributed, with higher values indicating a more diverse set of functional specialties represented during strategic decision-making. If a marketing strategy team was made up of nine members, and only one functional area (e.g., marketing) is represented, the diversity index is 0.00. If the group were made up of five members from marketing, three from operations, and one from finance, the functional diversity index would be .94. With equal representation, the value would be 2.20.

Strategic Information Exchange

Strategic information exchange seeks to measure the degree of strategic information shared among decision-makers. The scale is adapted from two existing constructs developed in the marketing literature: information transmission and intelligence dissemination. Information transmission is a six-item measure, which evaluates the diffusion of market information among relevant users (Moorman 1995). In the second round of data collection, a similar measure, developed by Kohli, Jaworski, and Kumar (1993), was included in the study. This construct, intelligence dissemination, is a seven-item scale reflecting the level of market information exchange within the organization. Since the focus of this study is on strategic-decisions, the concern is with the sharing of all types of information relevant to strategy formulation. As such, the two scales were combined and two additional items that captured information about conditions beyond the organization's industry were added. This

thirteen-item construct was evaluated on seven-point scales ranging from "strongly disagree" to "strongly agree."

Organizational Cognitive Complexity

Organizational cognitive complexity is measured in terms of the diversity of strategic orientations. Day and Nedungadi (1994) examined managerial schemas based on the relative emphasis placed on customer and competitor strategies. The customer and/or competitor orientation measures used in this study are validated scales based on research by Narver and Slater (1990). This dissertation expands the number of dimensions by including product and macroenvironmental orientations. Based on a study by Wright and his colleagues (1991), the product orientation measure represents an internal orientation emphasizing quality and low cost. Organizations following a product orientation base their strategies on creating a superior product in an efficient manner. The construct is measured with six items. Also developed for this study, macroenvironmental orientation is an organizational focus on issues and trends outside of the organization's immediate industry. A firm emphasizing a macroenvironmental focus is more likely to scan beyond the firm's immediate industry and seek to understand emerging opportunities and threats. The measure is evaluated using a nine-item scale.

The extent to which an organization engages in each orientation measure is evaluated on a seven-point agree-disagree scale. To measure the level of diversity of orientations to which the organization engages, the measures are aggregated and the four summed measure used as indicators of a higher-order factor, organizational cognitive complexity. An organization, which is more cognitively complex, will

strongly attune to a diverse set of environmental factors and therefore have a higher score. Such an organization will perceive multiple opportunities and threats in the environment and will gauge its strategic stance accordingly.

Decision-making Complexity

Specifically developed for this study, decision-making complexity is conceptualized as differentiating and integrating various issues in the decision-making process. Prior research has examined decision-making comprehensiveness as both the scope and depth of analysis (Menon et al. 1999) and the extent an organization tries to be exhaustive in making and integrating strategic decisions (Fredrickson 1984; Fredrickson and Mitchell 1984). Following the work of Mintzberg, Raisinghani and Theoret (1976), the decision-making process is broken down into three stages: identification, development, and selection. Mintzberg and others have concluded that these stages are not addressed in a discrete, sequential manner, but rather are simultaneous, interrelated events. Organizations engaging in complex decision-making approach the decision-making process by simultaneously considering multiple problems, alternatives, and selection criteria. Problem identification, alternative development, and solution selection are measured with six, seven, and six items, respectively. Each item is evaluated on a seven-point "strongly disagree" to "strongly agree" scale.

Marketing Strategy Creativity

Broadly defined, "creativity is the production of novel and useful ideas by an individual or small group of individuals working together" (Amabile 1988, p. 126). Creativity is the foundation upon which innovation is built and has been examined in

terms of marketing programs (Andrews and Smith 1996), new product development (Moorman and Miner 1997), and marketing strategy (Menon et al. 1999). Following the work of Menon and his colleagues (1999), this study examines marketing strategy creativity, which is defined as the extent to which the strategy represents a meaningful difference from prior strategies. The five-item construct is measured on seven-point agree-disagree scales.

Marketing Strategy Response Timeliness

Marketing strategy response timeliness is defined as how promptly the organization moves from strategy formation to implementation. The measure is an organizational perception of the speed at which the strategy is put into action. Multiple authors have examined the issue of speed. Moorman and Miner (1998b) examine action speed in terms of "the time to plan and execute an action" (p. 707). Eisenhardt (1989) examines the speed of strategic decision-making using multiple case analyses. Nutt (1998b) measures speed by examining plan implementation time using an objective measure in terms of months. As a dimension of market orientation, Kohli and Jaworski (1990) explore organization-wide responsiveness which they define as action taken in response to market intelligence. Using an eight-item measure, this study examines the speed with which strategic marketing decisions are implemented. The items are evaluated on seven-point, agree-disagree scales.

Procedure for Data Analysis

LISREL VIII (Joreskog and Sorbom 1996) was used for scale development/purification, justification of a higher-order representation, and evaluation of the structural model. Consistent with the recommendation of Anderson and Gerbing

(1988), a two-step approach was undertaken by estimating the measurement model prior to examining the structural model relationships. A two-step approach is used to test the overall validity of a theory by ensuring that the reliability of the measures are established first (Anderson and Gerbing 1988; Cohen et al. 1990). This avoids the interaction of measurement and structural models, especially when faced with measures that are less reliable or theory that is only tentative. Using the pretest data, the measures were subjected to a purification process and the model's measurement aspect examined for both internal and external consistency. A second round of data collection was conducted to confirm the measurement model and to test the higher-order representation of organizational cognitive complexity. The structural portion was also examined which also provided a confirmatory test of nomological validity. By examining the structural model relationships, each hypothesis was tested.

Procedure for Scale Development

To empirically examine the antecedents and consequences of organizational cognitive complexity, three new scales needed to be developed. Based on the recommendations of several authors (Churchill 1979; Clark and Watson 1995; DeVellis 1991; Gerbing and Anderson 1988), a rigorous procedure was followed in the formation of these scales. The primary goal of scale development is to create both a reliable and valid measure of an underlying construct. A basic assumption of measurement theory is that the measures are unidimensional or congeneric.

The following procedure was used as a guideline in the development of this study's measures. First, the conceptual domain of the construct was specified based on a thorough review of the literature. Next, a large, representative pool of items was

generated and then examined by a panel of judges. Using a convenient, yet representative sample, a preliminary analysis was performed to purify the scales and assess their reliability. Based upon these responses, the internal and external consistency of each measure was examined using a number of criteria, which are detailed below. These purified measures were then evaluated using a second sample. To assess nomological validity, the relationships among new and validated constructs were tested to demonstrate that each behaves as hypothesized.

Basic Assumptions. Each construct presented in the model is a latent variable and is not directly observable. In measuring latent variables, a scale, which is a group of indicators, is developed. These indicators are assumed to be unidimensional or congeneric. This means that the items have only one underlying trait or concept in common, and each is an acceptable alternative for the other. To assess unidimensionality, both the internal and external consistency of each set of indicators is measured (Gerbing and Anderson 1988). Internal consistency ensures that the indicators are positively associated with the same concept and are positively correlated with one another. In assessing external consistency, the concern is with the degree of association among constructs. Evaluating external consistency involves establishing discriminant validity to determine that each construct is empirically distinct.

Conceptualization. The first step in conceptualization is construct definition. To encompass the full domain of the construct, the definition needs to be very precise (Churchill 1979). This involves literature consultation to assess the manner in which other authors have considered the issue. Clark and Watson (1995) state three reasons for a comprehensive literature review: in order to 1) specify the scope and range of the

construct, 2) discover problems with current measures, and 3) determine whether a new scale is actually necessary. During the scale development process, conceptual integrity is critical. No item with important construct-relevant information should be removed from the study.

Item Pool Generation. The next step is to generate a large pool of items, which should represent all content areas of the construct. Clark and Watson (1995) recommend four to ten items per dimension. The items themselves should be short, comprehensible, and unambiguous (DeVellis 1991). The item pool is then subjected to review for representativeness and clarity by domain judges. Each judge is provided with the construct's definition and asked to judge the applicability, or face validity, of each item in relation to the defined construct. The evaluation of the item pool was based on a five-point "not representative" to "very representative" scale. Items were retained for cases in which all judges agreed that the item is representative.

Pretest Data Collection. The item pool is then subjected to a pretest using a sample representative of the target group of interest (business executives). Additional scales, which were included in the survey, were either adapted from or validated in prior studies. Their inclusion provided an opportunity to assess the measurement properties of all constructs, as well as test the construct validity of the new measures.

Scale Evaluation and Refinement. To analyze the measurement properties, there were two rounds of data collection. The first round was used to purify the measures and generally assess their reliability. The second round was conducted to confirm the earlier results and to optimize the number of items. Analysis of both sets of data began with an examination of item distribution (Clark and Watson 1995). Each item's

kurtosis, skewness, and frequency of responses was examined. Those items with widely varying distributions are retained for further analysis. Next, the unidimensionality of each scale was established by examining the interrelations among scale items using three methods: 1) inter-item correlations, 2) exploratory factor analysis, and 3) confirmatory factor analysis (Clark and Watson 1995). This was followed by an examination of each construct's internal (coefficient alpha, composite reliability, and average variance extracted) and external (discriminant validity) consistency. Finally, the fit of the measurement model was assessed.

As an indicator of internal consistency, the correlations among indicators should be high on the same construct (i.e., greater than .35 but less than .85) and low on items from other constructs. Items with an average inter-item correlation not greater than .35 were candidates for removal. Following this assessment, the items for each scale were factor analyzed. Items with less than a .40 loading on the first factor were candidates for removal. As a further assurance of internal consistency, the item-loadings and standardized residuals, both within and across constructs, were examined using confirmatory factor analysis. The t-values of the item loadings were examined for statistical significance. Large standardized residuals (i.e., greater than 2.58) among indicators within a construct are due to an unknown common source, such as a shared methods factor or some other unwanted source of variation. While allowing the error terms to correlate improves fit, it masks the true meaning of the measure's structure. Such items were candidates for removal. However, before any item is deleted from the study, each is first examined for its conceptual contribution and removed only if deemed to have a negligible effect on conceptual integrity.

As evidence of internal consistency, three measures were examined: 1) coefficient alpha, 2) composite reliability, and 3) average variance extracted. Both coefficient alpha and composite reliability gauge the degree to which the indicators reflect the common latent construct. Following the guideline established by Nunnally (1978), a coefficient alpha of at least .80 is sought. Fornell and Larcker (1981) recommend a composite reliability of .70. Average variance extracted is also included as an estimate of construct validity. The measure reflects the overall amount of variance in the indicators accounted for by the latent construct. Values of .50 or higher are an indication of validity for a construct's measure (Fornell and Larcker 1981).

To ensure that distinct constructs are being measured, external dimensionality is also assessed. The most stringent test was performed by ensuring that the square of the parameter estimate between two constructs (ϕ^2) is less than the average AVE between any two constructs (Fornell and Larcker 1981). In other words, each measure accounts for more variation within the construct than is explained between constructs.

To assess the measurement models, several measurement indices were utilized. These measures indicate the degree to which the observed input matrix (e.g., covariance matrix) is predicted by the estimated model. Absolute fit measures gauge the extent to which the estimated model predicts the observed covariance or correlation matrix. Commonly reported measures are chi-square (χ^2), root mean square error of approximation (RMSEA), goodness-of-fit (GFI), and adjusted goodness-of-fit (AGFI). Although χ^2 is the only measure with an associated statistical test, relying solely on the statistic is not recommended, as it is sensitive to large samples. RMSEA measures the discrepancy between the observed and estimated model per degree of freedom. In

addition, this value seeks to measure the discrepancy in terms of the population and not just the sample at hand. Values between .05 and .08 are deemed acceptable (Hair et al. 1998). For both GFI and AGFI, a cutoff of .90 is recommended. However, both tests behave inconsistently at samples smaller than 250 (Hu and Bentler 1995). To address this sample-related inconsistency, two incremental fit measures are reported, the Tucker-Lewis index (TLI) and comparative fit index (CFI). Both measures gauge the extent to which the estimated model is superior to a comparison model. TLI is also called the nonnormed fit index (NNFI) because the measure can lie outside the 0-1 range (Hu and Bentler 1995). As with GFI and AGFI, a cutoff value of .90 is generally accepted for both TLI and CFI (Hoyle and Panter 1995).

Examination of both the internal and external dimensions demonstrates that the intended concept or trait is being measured. Two measurement models were conducted. The first was used to test the organizational cognitive complexity construct and its dimensions. A second measurement model was tested to examine the psychometric properties of the remaining constructs. Table 5 provides a summary of the criteria used in assessing the measurement aspect:

Table 5: Summary of Criteria for Scale Development

Item Analysis	
Distribution	Wide, varying
Average inter-item correlation	> .35
Standardized residuals	≥ 2.58
Item loading's t-value	Statistically significant
Construct Analysis	
Cronbach's alpha	≥ .80
Coefficient alpha	≥ .70
Average variance extracted	≥ .50
Discriminant Validity	ϕ^2 < average AVE
Model Analysis	
GFI, AGFI, TLI, and CFI	≥ .90
RMSEA	.05 - .06

Procedure for Representing a Higher-order Factor

With a higher-order factor, the latent constructs are represented as indicators of a broader construct. To test whether a higher-order factor is an adequate representation, three models were considered: (1) a correlated first-order structure in which constructs are specified as correlated first-order factors; (2) a higher-order factor in which the items are specified as one overall construct with first-order dimensions; and (3) a higher-order factor in which the gamma paths are fixed as equal. There are a number of empirical conditions that, if met, justify the modeling of a construct as a higher-order factor structure. By performing a chi-square difference test, the fit of first-order and higher-order factors can be compared. If the fit of the higher-order model is better than that of the single first-order model, then evidence supports modeling the construct as a higher-order model (Bagozzi and Heatherton 1994; Marsh and Hocevar 1985). Other empirical criteria examine each model's coefficients (ϕ's and γ's) and include assessing whether: (1) the first-order ϕ's and the higher-order γ's are high ($\gamma > .6$); (2) the first-order ϕ's lack discriminant validity and are therefore not distinct; and (3) the higher-order γ's are equal.

Procedure for Analyzing the Structural Model

Prior to estimating the structural model, the measurement aspect is fixed to control for error (Anderson and Gerbing 1988; Cohen, et al. 1990). This approach avoids interaction between the measurement and structural models, and thus one model masking the poor fit of the other. The latent constructs must first be proven reliable and valid before any confident inference can be made about the relationships among latent constructs. To assess the structural model, three criteria are used: (1) the fit indices, (2)

the significance of the completely standardized path estimates, and (3) the amount of variance explained in each of the endogenous constructs. The indices used to evaluate the measurement model (RMSEA, GFI, AGFI, TLI, and CFI) were estimated and assessed for the structural portion. Any poor fit in the structural model is an indicator of unmodeled correlation between the latent constructs. The completely standardized path estimates were examined as a test of the model's hypotheses. Additionally, the amount of variance accounted for in each dependent variable by the structural equations is reported as an assessment of the substantive contribution or practical significance.

CHAPTER 4: EVALUATING THE MEASURMENT SCALES

In Chapter 3, a detailed outline was provided which guided the scale development and analysis procedure followed in this chapter. In the first section of this chapter, the measurement results from study one are presented as a preliminary test of each latent construct's reliability. As a further test of the measurement aspect, the psychometric properties of the measurement scales are examined using data collected from a second sample. This chapter concludes with a summary of the items retained and their respective loadings.

Construct Validity: Study One

Study one is designed as a preliminary test of each construct's measurement properties. First, a brief discussion of the data collection and evaluation procedure is included. Next, the internal consistency of organizational cognitive complexity dimensions is evaluated. Then, the full measurement results follow.

Data Collection and Evaluation

One hundred and seventeen MBA and Executive MBA students from four sections of a marketing management course were asked to participate in the study. Additionally, each was requested to identify one individual whom they knew to hold organizational level responsibilities for participation. Of the 234 surveys distributed, 167 were returned (ninety-seven student and seventy non-student surveys) for a response rate of 71.4 percent. For the pretest, appropriate key informants were determined to have at least moderate involvement in strategic planning decisions. Based on this assessment, seventy-seven respondents were removed from the study. The remaining eighty-eight surveys were used in the following analysis.

Modeling the Organizational Cognitive Complexity Construct

The organizational cognitive complexity measure is comprised of four subdimensions of competitive advantage: competitor, customer, product, and macroenvironmental orientation. Each dimension is comprised of four to nine items. The item distributions were acceptable. To assess the measurement properties, the average inter-item correlation for each item was first examined followed by principal components factor analysis. Items, with an average inter-item correlation less than a .35, were deemed to not adequately measure the construct and were removed from the study. In all, two items were removed after ensuring that face validity would not be compromised. Using principal component factor analysis, item loadings were examined to ensure that each had at least a .40 loading on the first factor. All items met this criterion. Next, a series of five one-factor models were evaluating using LISREL VIII with covariances as input. Due to a small sample size, five single-factor models were estimated rather than a single measurement model of all constructs simultaneously. The fit statistics and internal consistency were examined to assess model fit and reliability.

To ensure internal consistency, items demonstrating high within-factor correlated errors were examined as candidates for removal. Before deletion from the study, each indicator was first examined for its conceptual contribution and if deemed negligible was removed from the study. An additional criterion, that each construct retains at least five items, was imposed to ensure that enough items remained for the final study. Due to this additional criterion, no items were removed despite that their removal would have lead to better fitting models. As evidence of internal consistency, the composite reliability estimates are examined (see Table 6). The reliability estimates

ranged from .81 to .90, indicating acceptable reliability for the constructs. Also, all items have significant t-value loadings for their respective constructs ($p < .01$). AVE estimates are also reported in Table 6. All constructs meet the .50 criterion.

Table 6: Study One - Internal Consistency Measures for the Organizational Cognitive Complexity Subdimensions

	Coefficient Alpha	Composite Reliability	AVE
Competitor	.81	.82	.54
Customer	.89	.90	.59
Product	.84	.85	.53
Macroenvironmental	.89	.90	.52

Fit statistics and internal consistency estimates for each single factor model are reported in Table 7. Due to the sensitivity of χ^2 to sample size, RMSEA is reported as an assessment of overall fit. The measure ranges from .00 to .14. With measures less than .08 considered adequate, three of the five models do not meet this criteria. For the remaining fit indices, values in the .90 range are considered adequate. GFI ranges from .91 to .99, while the AGFI range between .83 and .96. Because of inconsistencies in GFI and AGFI due to small sample sizes, TLI and CFI are also reported. For the five single-factor models, the indices range from .91 to 1.01.

Table 7: Study One - Measurement Model Estimates for the Organizational Cognitive Complexity Subdimensions

	χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
Competitor	1.60	2	.00	.99	.96	1.01	1.00
Customer	17.68	9	.11	.93	.84	.95	.97
Product	13.06	5	.14	.94	.83	.91	.95
Macroenvironmental	41.95	20	.11	.91	.84	.91	.94

Note: df = degrees of freedom; RMSEA = root mean square error of approximation; GFI = goodness-of-fit index; AGFI = adjusted-goodness-of-fit index; TLI = Tucker-Lewis index; CFI = comparative-fit index

Additionally, the correlations among the four subdimensions of organizational cognitive complexity are reported in Table 8.

Table 8: Study One - Correlations Among the Organizational Cognitive Complexity Subdimensions

	1	2	3	4
(1) Competitor	1.00			
(2) Customer	0.64	1.00		
(3) Product	0.49	0.68	1.00	
(4) Macroenvironmental	0.67	0.61	0.48	1.00

Full Measurement Model

The same procedure, followed in modeling the organizational cognitive complexity construct, was adhered to for the full measurement model. Each item's distribution and average inter-item correlation was examined followed by a series of one-factor models. One item, from both market turbulence and marketing strategy response timeliness, was removed for having an inter-item correlation below .35. A series of one-factor principal component factor analyses demonstrated that each item sufficiently loaded on the first factor.

The eight constructs were modeled as eight first-order factors in LISREL VIII using the covariance matrix as input. All items have significant t-value loadings for their respective constructs ($p < .01$). Also, items demonstrating high within-factor correlated errors were examined as candidates for removal. While maintaining earlier conditions of face validity and practical concerns, eight items were removed from the study due to high within-factor correlated error. One item was removed from both marketing strategy response timelines and information transmission. The remaining six items were removed from decision-making complexity. The source of the high within-factor standardized residual was deemed to originate from a shared methods factor in that the deleted items were highly repetitive.

As further evidence of internal consistency, coefficient alpha, composite reliability and AVE estimates are reported in Table 9. The reliability estimates ranged from .77 to .96, indicating acceptable reliability for the constructs. Average variance extracted estimates are also reported in Table 9. One construct, market turbulence, falls below the .50 criterion indicating that the amount of variance in the items accounted for by the latent construct is less than half. Although the problem would be remedied by the removal of a single item, this would raise practical concerns of having too few items for the final analysis.

The model is also assessed for discriminant validity to ensure that distinct constructs are being measured. The most stringent test was performed by confirming that the square of the parameter estimate between two constructs (ϕ^2) is less than the average AVE between any two constructs. In all cases, discriminant validity was supported.

Table 9: Study One - Internal Consistency Measures for Measurement Model

	Coefficient Alpha	Composite Reliability	AVE
Information Transmission	.88	.87	.58
Organizational Cognitive Complexity	.85	.86	.60
Decision-making Complexity	.96	.96	.67
Marketing Strategy Creativity	.83	.83	.50
Marketing Strategy Response Timeliness	.91	.91	.64
Market Turbulence	.77	.78	.48
Technological Turbulence	.84	.85	.59
Open-mindedness	.87	.88	.54

The fit statistics and internal consistency estimates for each single factor model are reported in Table 10. The RMSEA ranges from .00 to .21. The GFI ranges from .90 to 1.00, and the AGFI range from .70 to .98. Because these measures perform poorly in smaller sample size, the TLI and the CFI are also reported. For each single factor model, the indices range from .77 to 1.04.

Table 10: Study One - Measurement Model Estimates

Measures	χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
Information Transmission	19.90	5	.19	.91	.72	.89	.94
Organizational Cognitive Complexity	9.93	2	.21	.94	.71	.85	.95
Decision-making Complexity	85.95	54	.08	.87	.81	.96	.97
Marketing Strategy Creativity	24.03	5	.21	.90	.70	.77	.88
Marketing Strategy Response Timeliness	5.86	9	.00	.98	.95	1.02	1.00
Market Turbulence	0.58	2	.00	1.00	.98	1.04	1.00
Technological Turbulence	1.13	2	.00	.99	.97	1.02	1.00
Open-mindedness	10.10	9	.04	.96	.91	.99	1.00

Construct Validity: Study Two

Study two is designed as a confirmatory test of each construct's measurement properties. The same procedure from study one is followed. There are a few differences in the sample and questionnaire between the two studies. In the second study, the sample is larger, and the data is collected from a single industry. Also, a number of additional scales are included in the questionnaire. Additionally, all items from validated scales were retained in the survey instrument.

Data Collection and Evaluation

In this section, the quality of the final data is examined. Of the 1,055 surveys distributed, 261 were returned which represents a 24.7 percent response rate. The response rates for BBSI, IMDA, and NAED were 21.1, 30.3, and 25.8 percent, respectively. Given past research using top managers as key informants generally attain response rates of 15-20% (Menon, Bharadwaj, and Howell 1996), the level of response was considered acceptable. Three tests are performed to assess the quality of the data: informant competence, non-response bias, and data poolability. Once the integrity of the data are confirmed, a second round of model purification and evaluation is performed.

Test of Key Informant Competence. In evaluating informant competence, this study follows similar procedures as conducted by Menon and his colleagues (1999) and

Day and Nedungadi (1994) to verify appropriate respondents. Three measures are used: strategic decision-making involvement, organizational responsibility, and organizational experience. First, appropriate respondents had to engage in strategic planning to a considerable extent within their firm (a score of 'five' or higher on a seven-point scale). Secondly, qualified informants had to have organization-wide responsibilities. By determining the respondent's current position in the organization, level of responsibility was assessed. Respondents were required to hold at least a division manager position (CEO, VP, or middle manager) to remain in the study. A third criterion was that the informant be knowledgeable about the organization and its strategic issues. Organizational tenure was used as a measure of knowledge (Phillips 1981). Respondents with more than five years of experience with the target organization were included for further analysis.

Based on the criteria above, forty-four respondents were deemed unqualified and were removed from the study. Of those, eighteen had failed to answer one of the three qualifying questions, and twenty-six had failed one or more of the criteria above. Also, thirteen questionnaires were returned unmarked from respondents who refused to take part in the study stating that either company policy forbids their participation or they simply could not dedicate the time to completing the questionnaire. Of the 261 returned questionnaires, fifty-seven respondents were removed from the study. The remaining 204 responses were used to confirm the reliability and validity of the measures evaluated in study one, estimate the structural model, and test the hypotheses. Table 11 presents the results of the key informant competency evaluation by depicting the distribution of the responses across the three criteria.

Table 11: Study Two - Results of Key Informant Competency Evaluation

Current position			Organizational Work Experience					Total
			5 years or less	6 to 10 years	11 to 15 years	16 to 20 years	More than 20 years	
CEO President	Strategic	To a small extent					1	1
	Involvement	To a moderate extent					2	2
		To a considerable extent		1	2	2	12	17
		To a great extent	2	3	4	7	44	60
		To an extreme extent	6	11	11	21	41	90
	Total		8	15	17	30	100	170
Vice President	Strategic	To a moderate extent				1		1
	Involvement	To a considerable extent	1		2	1	2	6
		To a great extent	2	2	3	2	2	11
		To an extreme extent	3	3	4	3	9	22
	Total		6	5	9	7	13	40
Management	Strategic	To a small extent	1					1
	Involvement	To a moderate extent	1					1
		To a considerable extent	1	2	1		1	5
		To a great extent	1	2	2	1	1	7
		To an extreme extent		1	1			2
	Total		4	5	4	1	2	16
Other	Strategic	To a considerable extent	1					1
	Involvement	To a great extent	1					1
		To an extreme extent				1	1	2
	Total		2	0	0	1	1	4

Note: Thirty-one respondents were removed from the study for either refusing to take part or not answering a qualifying question.

Test of Non-response Bias. To test for a non-response bias, mean differences among dependent variables were examined between those who responded within the first four weeks (N = 142) and later returns (N = 119). No differences were found between early and late respondents on any of the dependent variables: strategic information exchange ($F_{1,199} = .924$, $p = .338$); organizational cognitive complexity ($F_{1,201} = .077$, $p = .782$); decision-making complexity ($F_{1,198} = .832$, $p = .363$); marketing strategy creativity ($F_{1,201} = .058$, $p = .809$); and marketing strategy response timeliness ($F_{1,199} = .863$, $p = .354$). Therefore, nonresponse bias was determined not to be an issue (Armstrong and Overton 1977).

Test of Data Poolability. To assess the appropriateness of pooling the data across three types of distributors, a Box test was performed. This test examines the equality of covariance matrices across groups (Hair et al. 1998). In this case, the assessment was performed to ensure that the relationships among variables of interest were not different across the three distributor groups. While Box's M is highly

sensitive (Hair et al. 1998), the statistic was not significant (Box's M = 45.316, $F_{30, 13505}$ = 1.411, p = .067) indicating that it is appropriate to combine the sample.

Modeling the Organizational Cognitive Complexity Construct

Measurement Model. Adhering to the same procedure detailed in study one, the measurement properties were assessed. The item distribution and factor loadings were acceptable. One item from each of the following constructs was removed due to a low average inter-item correlation: competitor, product, and macroenvironmental. Unlike study one, the sample size was deemed large enough to estimate the full measurement model. Therefore, the four constructs, which make up organizational cognitive complexity, were modeled as four first-order factors in LISREL VIII using the covariance matrix as input. This allowed for examination of both within- and across factor loadings and measurement error. Four items were removed due to high standardized residuals: two macroenvironmental, one product, and one customer orientation. All remaining items have significant loadings. As evidence of model fit and internal consistency, the fit statistics, reliabilities, AVE estimates, and correlations among constructs are reported in Table 12.

Table 12: Study Two - Organizational Cognitive Complexity Measurement Model Results

Fit Statistics

χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
219	98	.078	.89	.84	.90	.92

Internal Consistency

	Coefficient Alpha	Composite Reliability	AVE
Competitor Orientation	.72	.72	.47
Customer Orientation	.80	.83	.50
Product Orientation	.75	.76	.52
Macroenvironmental Orientation	.86	.86	.56

Correlation among Latent Constructs

	1	2	3	4
(1) Competitor Orientation	1.00			
(2) Customer Orientation	0.61	1.00		
(3) Product Orientation	0.46	0.71	1.00	
(4) Macroenvironmental Orientation	0.35	0.37	0.46	1.00

Empirical Support for Higher-order Factor. Organizational cognitive complexity is represented as a higher-order factor. That is, the construct is a multidimensional concept comprised of competitor, customer, product, and macroenvironmental orientations. Each orientation is represented as "indicators" of this broader construct. To establish empirical support for the higher-order representation, a comparison was made between the four correlated first-order factors and the higher-order factor in which the items are specified as one overall construct with four first-order dimensions. Figure 3 depicts these two models.

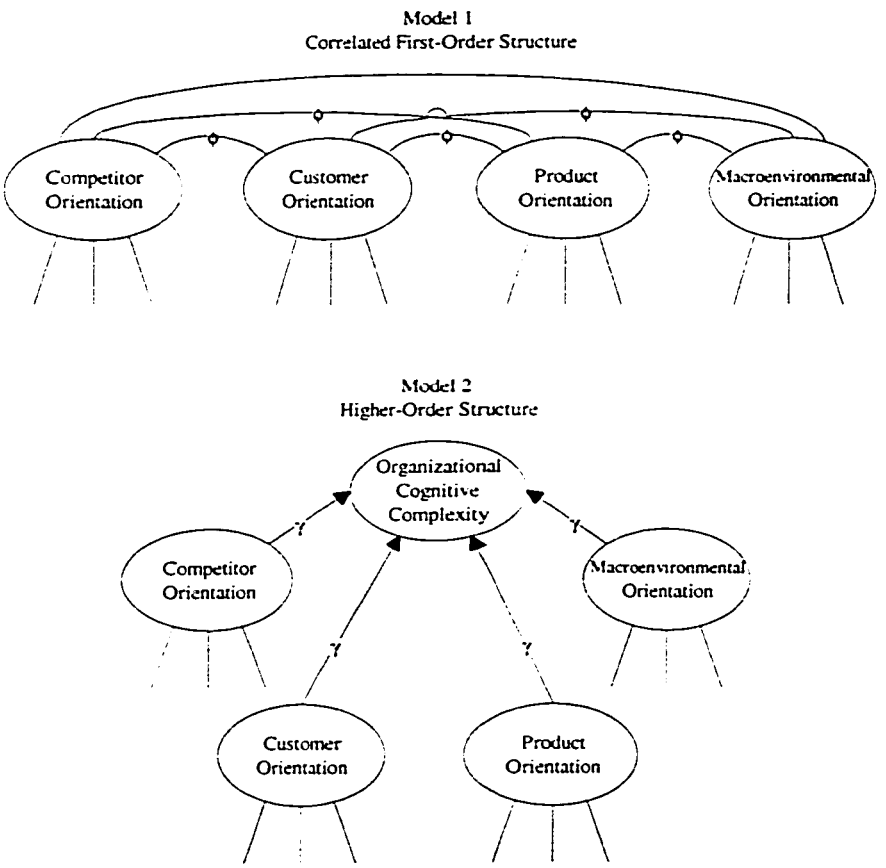

Figure 3: Framework for Representing Organizational Strategic Processes

The overall fits of the higher- and first-order factor models are adequate (see Table 13). In comparing fit between two factor structures, a significant difference is found ($\chi^2_{diff} = 12$, $df_{diff} = 2$, $p < .01$). While the change in χ^2 is significant, the statistic is sensitive to sample size. As such, Marsh suggests that researchers also examine fit across a number of indices. These other fit indices are relatively the same throughout indicating that the higher-order model fits equally well. For this reason, the higher-order representation is an adequate representation.

As an additional evaluation, an assessment was performed on the estimated parameter coefficients. The first-order model ϕ's (range from .43 to .89) and completely standardized higher-order γ's (competitor, customer, product, and macroenvironmental are .75, .95, .94, and .52, respectively) are of an acceptable magnitude. Partial support for the higher-order representation is also demonstrated due to a lack of discriminant validity between two pairs of constructs in the first-order factor: competitor-customer and customer-product. However, the discriminant validity test does indicate that the other pairs are distinct. To assess whether the γ's are equal in the higher-order factor, an invariance test was performed. This test involves comparing the fit of model with equivalent γ's with that of the higher-order factor. While the change in χ^2 is significant ($\chi^2_{diff} = 12$, $df_{diff} = 3$, $p < .01$), the other fit indices indicate that the higher-order model fits equally well. Additionally, the higher-order model is a more parsimonious representation. Overall, these results, presented in Table 13, indicate that the higher-order factor is suitable representation of organizational cognitive complexity. Therefore, the first-order indicators of the higher-order factor can be used as indicators in a structural model.

Table 13: Study Two - Organizational Cognitive Complexity Results

Fit Statistics							
Model	χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
Higher-order	231	100	.08	.88	.84	.89	.91
First-order	219	98	.08	.89	.84	.90	.92
Equality	243	103	.08	.88	.84	.89	.90

Phi Correlation and Gamma Path Coefficients				
	1	2	3	4
(1) Competitor Orientation	.75			
(2) Customer Orientation	.74	.95		
(3) Product Orientation	.62	.89	.94	
(4) Macroenvironmental Orientation	.45	.43	.56	.52

Note: Numbers on the diagonal are the estimated gamma path coefficients.

Full Measurement Model

Having established the reliability of the organizational cognitive complexity measurement model, the measurement properties of the full model were examined. First, an item analysis was performed for each of the eight constructs. The item distributions were acceptable. However, three items with low inter-item correlation (below .35) were removed, one response timeliness item and two market turbulence items. Factor-analyzing the items demonstrated that each loaded adequately on its respective factor.

The full measurement model was specified as eight correlated first-order factors. All items loaded significantly on their respective factors. Nine items were removed, however, due to high within- and between-factor standardized residuals. The removed items were as follows: one response timelines, two open-mindedness, three decision-making complexity, and three strategic information exchange items. The fit statistics and internal consistency were examined to assess model fit, reliability, and discriminant validity. Each is reported in Table 14. Coefficient alpha and composite reliability range from .69 to .92. All but two of the average variance extracted estimates achieved the .50 criterion. With a value of .055, RMSEA indicates acceptable model fit.

However, the GFI and AGFI values fall below the desired .90 threshold and are .78 and .75, respectively. Although the indices indicate marginal fit, both have been shown to behave inconsistently with smaller sample sizes. Both TLI and CFI are within the .90 range, which is designated as adequate fit. Additionally, discriminant validity was supported in all cases.

Table 14: Study Two – Full Measurement Model Results

Fit Statistics						
χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
1337	832	.055	.78	.75	.89	.90

Internal Consistency			
	Coefficient Alpha	Composite Reliability	AVE
Strategic Information Exchange	.86	.87	.45
Organizational Cognitive Complexity	.85	.81	.52
Decision-making Complexity	.92	.92	.56
Marketing Strategy Creativity	.84	.85	.54
Marketing Strategy Response Timeliness	.91	.91	.63
Market Turbulence	.69	.71	.47
Technological Turbulence	.86	.87	.62
Open-mindedness	.88	.89	.66

Summary of Scale Refinement and Evaluation Results

To assess the model's measurement properties, two rounds of data collection were performed. The respondents in both study one and two were considered to be adequate representatives of the population of interest (see Appendix E). The measurement model results from both studies resulted in the elimination of several problematic items. Based upon established measurement criteria, the initial pool of eighty-six items was reduced to forty-three. Study one provided a preliminary analysis of the measurement properties. The unidimensionality of each latent construct was simultaneously demonstrated using confirmatory factor analysis in study two. In all, both the internal and external consistency of the measures was established. Appendix D provides the descriptive statistics and completely standardized loadings for each of the study's latent constructs.

CHAPTER 5: STRUCTURAL MODEL AND HYPOTHESES TEST RESULTS

Chapter 2 provided the theoretical development of the organizational cognitive complexity, its determinants, and consequences. The research design, proposed measures, and steps in data analysis were discussed in Chapter 3. Chapter 4 detailed a two-part assessment of the study's measures. In this chapter, the overall model and individual hypotheses are tested. Based on the results, an alternative model is proposed, evaluated, and discussed.

Analyzing the Structural Model

Prior to estimation, the measurement aspect of the model was fixed to control for measurement error. Based on the composite reliabilities, the lambda's (λ's) were fixed as the square root of alpha (α) and the error terms as 1- α (Anderson and Gerbing 1988; Cohen, et al. 1990). Using a summed scale of the indicators, the correlation matrix was computed and used as input. Table 15 reports the correlations among the latent constructs for the structural model.

Table 15: Correlations among Latent Constructs

	1	2	3	4	5	6	7	8	9
(1) Strategic Information Exchange	1.00								
(2) Organizational Cognitive Complexity	0.66	1.00							
(3) Decision-making Complexity	0.48	0.59	1.00						
(4) Marketing Strategy Creativity	0.49	0.51	0.38	1.00					
(5) Marketing Strategy Response Timeliness	0.52	0.65	0.44	0.52	1.00				
(6) Market Turbulence	0.28	0.29	0.22	0.28	0.26	1.00			
(7) Technological Turbulence	0.03	0.09	0.17	0.13	-0.02	0.13	1.00		
(8) Open-mindedness	0.49	0.53	0.55	0.44	0.54	0.18	0.08	1.00	
(9) Team Functional Diversity	0.24	0.17	0.10	0.13	0.08	0.22	0.03	0.03	1.00

The model consists of four exogenous and five endogenous variables. A total of thirteen paths were specified among the variables. The latent constructs and the hypothesized relationships are illustrated in Figure 4.

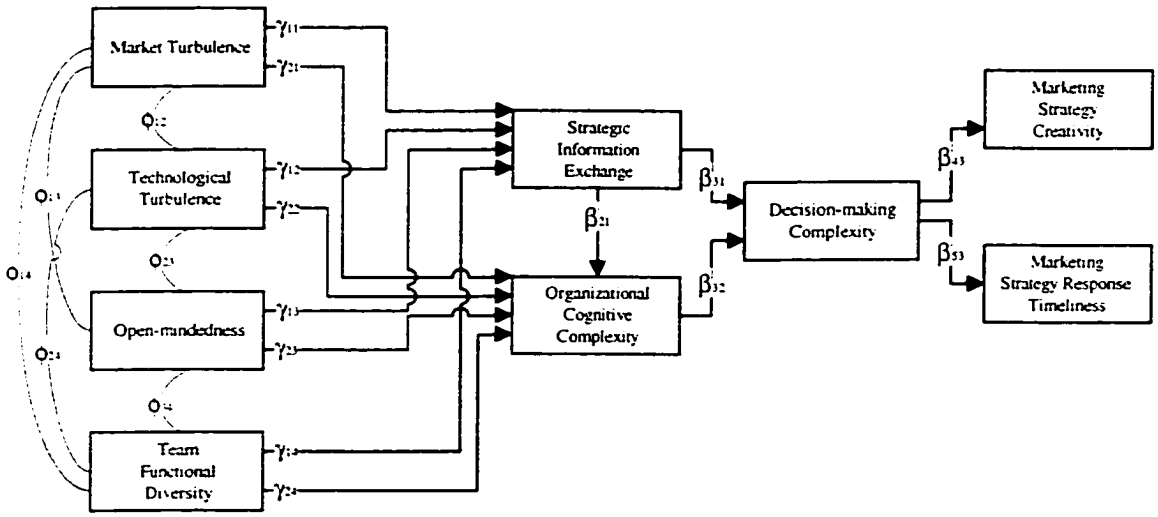

Figure 4: Hypothesized Relationships Among Latent Constructs

To assess the structural model, three criteria were used: (1) the fit indices, (2) the significance of the completely standardized path estimates, and (3) the amount of variance explained in each of the endogenous constructs. The same indices used to evaluate the measurement model (RMSEA, GFI, AGFI, TLI, and CFI) were estimated for the structural portion and assessed using the same criteria as those used to evaluate the measurement aspect. In Table 16, the overall fit of the structural model and explained variance of each structural equation are reported.

Table 16: Structural Model Fit and Explained Variance in Endogenous Constructs

Fit Statistics						
χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
150.78	17	.20	.85	.61	.50	.76

Endogenous Construct	Explained Variance
Strategic Information Exchange	.41
Organizational Cognitive Complexity	.73
Decision-making Complexity	.62
Marketing Strategy Response Timeliness	.25
Marketing Strategy Creativity	.30

The results, provided in Table 16, indicate an inadequate fit for the structural model. None of the indices meet the standard guidelines detailed in Chapter 3. The structural equations account for 41% of the variance in strategic information exchange, 73% of

the variance in organizational cognitive complexity, 62% of the variance in decision-making complexity, 25% of the variance in marketing strategy creativity, and 30% of the variance in marketing strategy response timeliness.

Test of Hypotheses

Thirteen path coefficients were estimated. To provide empirical support for the study's hypotheses, the direction and statistical significance of each is examined. As Table 17 indicates, eight paths are statistically significant ($p < .05$ or better) providing partial support for the hypotheses.

Table 17: Summary Results of Individual Hypotheses Tests

Path	Estimates	
H_{1a}: Market Turbulence → Strategic Information Exchange: γ_{11}	.21	***
H_{1b}: Market Turbulence → Organizational Cognitive Complexity: γ_{21}	.09	*
H_{1a}: Technological Turbulence → Strategic Information Exchange: γ_{12}	-.06	n.s.
H_{1b}: Technological Turbulence → Organizational Cognitive Complexity: γ_{22}	.08	*
H_{2a}: Open-mindedness → Strategic Information Exchange: γ_{13}	.51	***
H_{2b}: Open-mindedness → Organizational Cognitive Complexity: γ_{23}	.33	***
H_{3a}: Team Functional diversity → Strategic Information Exchange: γ_{14}	.19	***
H_{3b}: Team Functional diversity → Organizational Cognitive Complexity: γ_{24}	.00	n.s.
H_{4a}: Strategic Information Exchange → Organizational Cognitive Complexity: β_{21}	.56	***
H_{4b}: Strategic Information Exchange → Decision-making Complexity: β_{31}	-.07	n.s.
H_5: Organizational Cognitive Complexity → Decision-making Complexity: β_{32}	.85	***
H_{6a}: Decision-making Complexity → Marketing Strategy Creativity: β_{43}	.51	***
H_{6b}: Decision-making Complexity → Marketing Strategy Response Timeliness: β_{53}	.55	***

* $p < .10$; ** $p < .05$; *** $p < .01$

H_1: The greater the perceived environmental turbulence, the greater the a) strategic information exchange and b) organizational cognitive complexity.

The empirical results only offer weak support for H_1. Two aspects of environmental turbulence were examined. Only market turbulence had a significant impact on strategic information exchange ($\gamma_{11} = .21$, t-value = 2.50). The link between organizational cognitive complexity and both market and technological turbulence demonstrates very weak support ($\gamma_{21} = .09$, $\gamma_{22} = .08$, t-values = 1.35 and 1.50, respectively), while the path between technological turbulence and organizational

cognitive complexity is not supported (γ_{12} = -.06, t-value = -.90). The results do indicate that market turbulence does enhance the level of strategic information exchange.

> H_2: The greater an organization's open-mindedness, the greater its a) strategic information exchange and b) organizational cognitive complexity.

Among all exogenous variables, the cultural dimension had the strongest and most consistent effect on organizational processes, which offers support to H_2. The greater an organization values an open-minded culture, the greater the diffusion of strategic information (γ_{13} = .51, t-value = 7.39). Additionally, a high level of information exchange enhances organizational cognitive complexity (γ_{23} = .31, t-value = 4.66).

> H_3: The greater the strategic decision-making team's functional diversity, the greater the a) strategic information exchange and b) organizational cognitive complexity.

With path coefficient (γ_{14}, γ_{24}) estimates of .19 (t-value = 2.87) and .00 (t-value = .03), the results of team functional diversity were mixed. While the results indicate that multifunctional representation enhances the flow of strategic information, there is no support for an association with organizational cognitive complexity. Therefore, H_{3a} is supported, but the results failed to support H_{3b}.

> H_4: The greater the organizational strategic information exchange, the greater the a) organizational cognitive complexity b) decision-making complexity.

The results are also mixed for strategic information exchange providing only partial support for H_4. However, the source for the mixed result is due to a suppressor effect originating from the high correlation between strategic information exchange and

organizational cognitive complexity. A discussion of suppressor effects and their impact on path coefficient estimates appears in the following section, "Summary of Structural Model Results." The results indicate that strategic information exchange has a strong effect on organizational cognitive complexity (β_{21} = .56, t-value = 7.19). However, due to the suppressor effect, the path to decision-making complexity is negative and non-significant (β_{31} = -.07, t-value = -.56).

> H_5: The more cognitively complex the organization, the greater decision-making complexity.

The results support the hypothesis that organizational cognitive complexity enhances decision-making complexity. The beta coefficient estimate (β_{32}) of .85 (t-value = 6.59) supports H_5. Therefore, organizational cognitive complexity aids in building a greater awareness as to the different ways to define problems, propose alternatives, and select solutions.

> H_6: The greater the decision-making complexity, a) the more creative the marketing strategy and b) the more timely the marketing strategy response.

The last hypothesis, H_6, examined the relationship between decision-making processes and strategic marketing outcomes. Decision-making complexity was significant for both marketing strategy creativity (β_{43} = .51, t-value = 7.11) and response timeliness (β_{43} = .55, t-value = 8.21). Therefore, the hypothesis received strong and consistent support. As the organization engages in a more elaborate decision-making, strategic actions become more creative and quicker.

Summary of Structural Model Results

In all, both the fit of the model and the number of significant path estimates need improvement. Of the thirteen estimated paths, eight received strong support; two

received marginal ($p < .10$) support; and three were not supported. The structural model displays inadequate fit due to the presence of "unmodeled" covariation. A number of high modification indices were evident between both strategic information exchange and organizational cognitive complexity and the two strategic outcome variables. Freeing these paths would lead to a significant and substantial reduction in chi-square and improved model fit. However, model modifications should be theoretically justified in order to avoid the problem of capitalization on chance, wherein modifications are not generalizable beyond the sample at hand (MacCallum, Roznowski, and Necowitz 1992).

Examining the relative strengths of the gamma paths among the exogenous variables indicates that open-mindedness is a primary driver accounting for a disproportionate amount of the explained variance in strategic information exchange and organizational cognitive complexity. Market turbulence and team functional diversity have approximately an equal effect on strategic information exchange. Compared with strategic information exchange, open-mindedness explains about the same amount of variation on organizational cognitive complexity.

Interpretation of strategic information exchange and organizational cognitive complexity on decision-making complexity is hampered by a suppressor effect arising from the collinearity between strategic information exchange and organizational cognitive complexity. When collinearity is evident, small fluctuations in the data may lead to substantial changes in coefficient estimates (Pedhazur 1997). In SEM, a different sign between correlation and coefficient is evidence of a suppressor effect between two constructs (Bentler and Chou 1987). In this case, the correlation between

strategic information exchange and decision-making complexity is positive and significant (ϕ = .48, $p < .01$), while the estimated path is negative (β = -.07, p = -.56). There is also an indication of a suppressor effect between organizational cognitive complexity and decision-making complexity. However, the effect does not manifest unless a direct effect is estimated between organizational cognitive complexity and the two strategic outcome variables. Decision-making complexity accounts for about a quarter to a third of the variation in the two strategic marketing outcomes.

Proposal and Evaluation of Alternative Model

Based on these results and a subsequent re-visitation of the literature, an alternative model is proposed. The alternative model differs in that a higher-order factor is proposed. With a higher-order factor, the latent constructs are represented as indicators of a broader construct. This section first argues for the existence of a higher-order factor representing the three mediating processes, strategic information exchange, organizational cognitive complexity, and decision-making complexity. If such a construct representation is justified, the model's complexity is reduced and the collinearity between the three mediating processes should be alleviated.

Higher-order Factor: Conceptual and Empirical Support

The alternative model is based in part on a higher-order factor containing all three of the model's organizational process variables, which mediate the relationship between context and outcome. To represent a construct as a higher-order factor requires both strong empirical and conceptual argument. This section details that argument by proposing and testing that each process is a dimension of a broader construct, organizational strategic sensemaking.

Conceptual Support for Higher-order Factor. While strategic information exchange, organizational cognitive complexity, and decision-making complexity were conceptualized and measured as distinct organizational processes, each can be viewed as a component of the strategy-making process. The strategy-making process is an emergent property of the organization (Burgelman 1991) which seeks to comprehend greater degrees of environmental complexity in order that it may adapt (Chakravarthy 1982). Organizational adaptation involves scanning, interpreting, and learning (Daft and Weick 1984; Milliken 1990), which are all important aspects of strategic sensemaking (Thomas, Clark, and Gioia 1993). As sensemaking systems, organizations "combine generic subjectivity of interlocking routines, the intersubjectivity of mutually reinforcing interpretation, and the movement back and forth between these two forms by means of continuous communication" (Weick 1995, p. 170). In other words, organizational strategic sensemaking is an emergent process based on the synthesis of communicative, interpretive, and decision-making processes.

Organizational sensemaking is a communicative (Donnellon 1986; Gioia 1986; Jablin 1982; Weick 1995), interpretive (Gioia 1986; Gioia and Thomas 1996; Weick 1995), and analytical process (Gioia 1986). Sensemaking involves "processes of attending, comparing, attributing, relating, reflecting, retaining, and so on" (Gioia 1986, p. 61). Collective meaning occurs through an ongoing interaction among information processing agents (Gioia and Chittipeddi 1991; Gioia and Thomas 1996; Hutchins and Klausen 1996; Thomas, Clark, and Gioia 1993; Weick 1995), each making 'sense' through schemas formed through prior experience (Gioia 1986). The perceptions of key decision-makers serve as the foundation for the strategic sensemaking process (Gioia

and Thomas 1996). Decision-making is a process of interpretation involving negotiation of cause-effect relationships and desired outcomes, rather than the determination of an action (Weick 1995). Building an organizational understanding of a strategic situation involves multiple, interacting members applying multiple definitions, possibilities, and criteria.

Empirical Support for Higher-order Factor. As an empirical test for the existence of a higher-order factor, two models were considered: (1) a correlated first-order structure in which three correlated first-order factors are specified and (2) a higher-order factor in which the items are specified as one overall sensemaking construct with three first-order dimensions. Figure 5 depicts these two models.

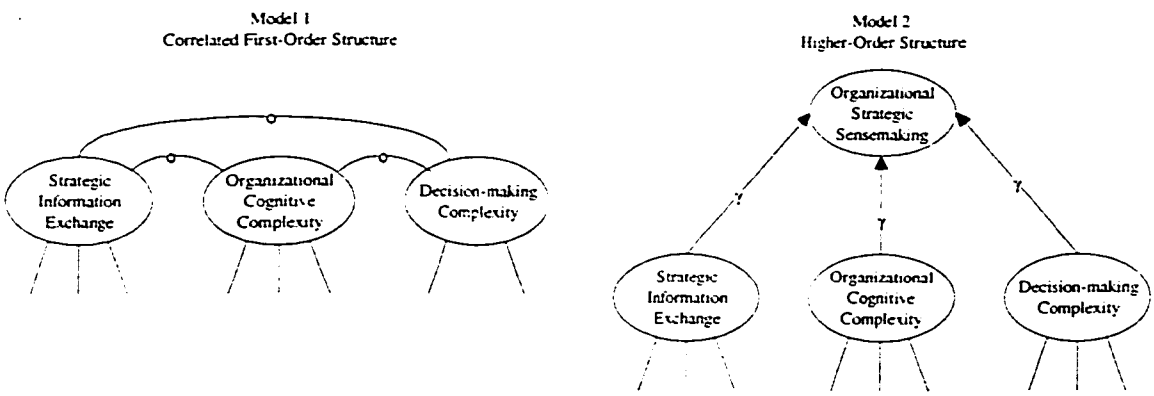

Figure 5: Framework for Representing Organizational Strategic Processes

In the case of this analysis, the overall fits of the higher- and first-order factor models are adequate (see Table 18). In comparing overall fit between two factor structures, no significant difference is found ($\chi^2_{diff} = 0$, df = 0, n.s.), nor is any difference expected due to the fact that the two models have identical degrees of freedom. For this reason, both are adequate representations. As an additional evaluation, an assessment was performed on the estimated parameter coefficients.

While the first-order model ϕ's (range from .54 to .74) and completely standardized higher-order γ's (strategic information exchange, organizational cognitive complexity, and decision-making complexity are .77, .70, and .97, respectively) are of a high magnitude, they are only moderately similar. A lack of discriminant validity in the first-order factor between strategic information exchange and decision-making complexity does provide partial support for the higher-order representation. However, the discriminant validity test does indicate that the other pairs are distinct. To assess whether the γ's are equal in the higher-order factor, an invariance test was performed. This test involves comparing the fit of model with equivalent γ's with that of the higher-order factor. While the change in χ^2 is significant ($\chi^2_{diff} = 11.83$, $df_{diff} = 2$, $p < .01$), Marsh (1994) suggests that researchers also examine fit across a number of indices as χ^2 is sensitive to sample size. The other fit indices indicate that the higher-order model fits equally well. Additionally, the higher-order model is a more parsimonious representation. Overall, these results, presented in Table 18, indicate that the higher-order factor is suitable representation of organizational strategic sensemaking and therefore justifies using the first-order indicators of the higher-order factor as indicators in a structural model.

Table 18: Organizational Strategic Sensemaking Results

Fit Statistics							
Model	χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
Higher-order	366.44	186	.069	.86	.82	.91	.92
First-order	366.44	186	.069	.86	.82	.91	.92
Equality	378.27	188	.071	.85	.82	.91	.92

Phi Correlation and Gamma Path Coefficients			
	1	2	3
(1) Strategic Information Exchange	.77		
(2) Organizational Cognitive Complexity	.54	.70	
(3) Decision-making Complexity	.74	.67	.96

Note: Numbers on the diagonal are the estimated gamma path coefficients.

Alternative Model Analysis and Results

Using a two-step analysis, an alternative model was assessed with organizational strategic sensemaking representing the three strategic processes. The seven constructs were modeled as seven correlated first-order factors. The structural model was then estimated and the hypotheses re-examined in light of the alternative model results.

Measurement Model Results. The covariance matrix is used as input to estimate the model. In Table 19, the results of the alternative model are presented. The organizational strategic sensemaking demonstrates internal consistency: coefficient alpha = .79, composite reliability = .82, and AVE = .60. There is no change in the remaining measures. An adequate level of fit was found. Discriminant validity is supported across all possible combinations of constructs.

Table 19: Measurement Model Results: Alternative Model

Fit Statistics

χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
393.06	260	.05	.87	.84	.94	.95

Correlations among Latent Constructs

	1	2	3	4	5	6	7
(1) Organizational Strategic Sensemaking	1.00						
(2) Marketing Strategy Creativity	0.55	1.00					
(3) Marketing Strategy Response Timeliness	0.62	0.52	1.00	0.26			
(4) Market Turbulence	0.32	0.28	0.26	1.00			
(5) Technological Turbulence	0.11	0.13	-0.02	0.13	1.00		
(6) Open-mindedness	0.61	0.44	0.54	0.18	0.08	1.00	
(7) Team Functional Diversity	0.21	0.13	0.08	0.22	0.03	0.03	1.00

Structural Model Results. The latent constructs and the hypothesized relationships are illustrated in Figure 6. The same two-stage procedure was followed. The correlation matrix, based on a summed scale of the indicators, was used as input.

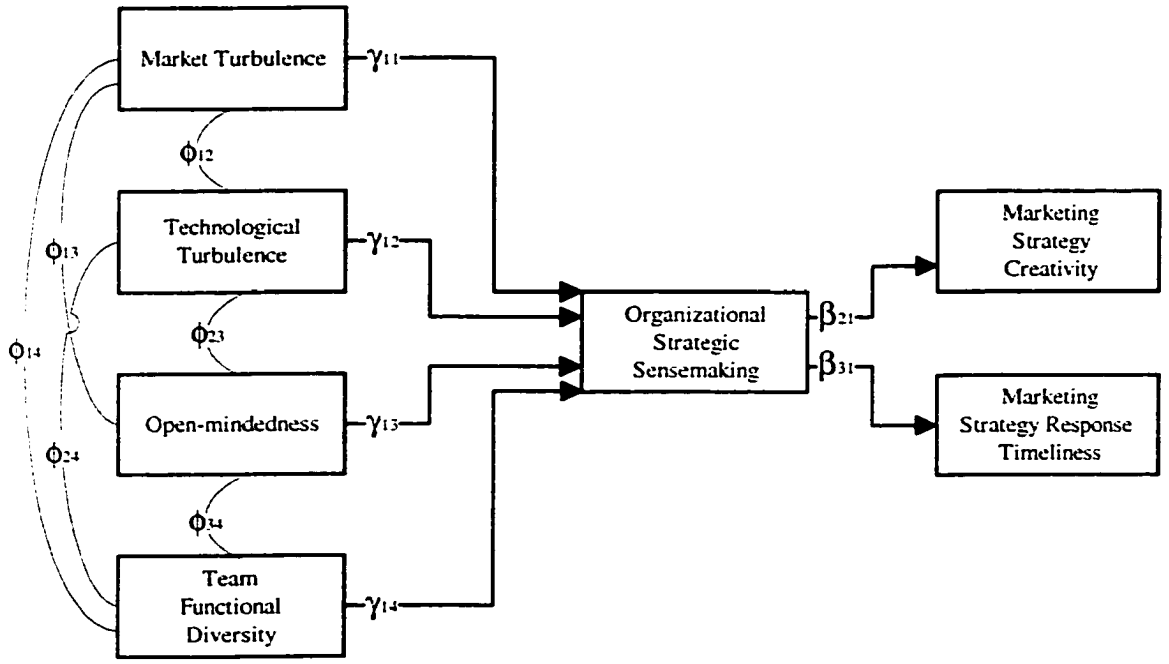

Figure 6: Alternative Model's Hypothesized Relationships Among Latent Constructs

The structural model results are presented in Table 20. The overall fit of the structural model meets the established criteria for fit indices. With the exception of the technological turbulence path, all paths are statistically significant ($p < .05$). Market turbulence, open-mindedness, and team functional diversity each perform a role in the strategic processes of organizations. The significant beta coefficients indicate that organizational strategic sensemaking enhances both marketing strategy creativity and response timeliness. The structural equations account for 64% of the variance in organizational strategic sensemaking, 47% of the variance in marketing strategy creativity, and 56% of the variance in marketing strategy response timeliness. In fact, there is a substantial increase in the amount of explained variance in the strategic outcome variables (creativity and response timeliness) between the initial and alternative models which provides additional support for the alternative model.

Table 20: Structural Model Estimates: Alternative Model

Fit Statistics						
χ^2	df	RMSEA	GFI	AGFI	TLI	CFI
17.17	9	.07	.98	.93	.94	.98

Path	Estimates	
Market Turbulence → Organizational Strategic Sensemaking: γ_{11}	.24	***
Technological Turbulence → Organizational Strategic Sensemaking: γ_{12}	.01	n.s.
Open-mindedness → Organizational Strategic Sensemaking: γ_{13}	.67	***
Team Functional Diversity → Organizational Strategic Sensemaking: γ_{14}	.13	**
Organizational Strategic Sensemaking→ Marketing Strategy Creativity: β_{21}	.70	***
Organizational Strategic Sensemaking→ Marketing Strategy Response Timeliness: β_{31}	.76	***

* $p < .10$; ** $p < .05$; *** $p < .01$

In summary, the alternative model, with organizational strategic sensemaking represented as a higher-order construct, receives stronger support than the initial model. While the models are nonnested and cannot be compared based on a χ^2 difference test, a parsimonious fit measure which is based on the degree of fit per estimated coefficient, does allow for comparisons (Hair et al. 1998). One such measure is Akaike's Information Criterion (AIK). A smaller AIK value indicates a model with better fit and parsimony (Akaike 1987). The values for the initial and alternative model are 226.78 and 64.42, respectively. Therefore, the alternative model is the optimal representation.

CHAPTER 6: INTERPRETATION, IMPLICATIONS, AND FUTURE RESEARCH

The results of the study's hypotheses and an alternative model were presented and described in Chapter 5. Chapter 6 begins with an interpretation of the empirical findings based on the results of the hypothesis testing and alternative model. The implications of these findings for both academics and practitioners is then discussed. This paper concludes by proposing future research based on the findings and limitations of this study.

Interpretation of the Findings

In exploring the development of complex strategic processes and their impact on marketing strategy, this paper has found that complex decisions require organizations to attend to a multiplicity of internal and external factors. In order to maintain such a multidimensional focus, organizations must not only design themselves in ways that facilitate the flow of diverse ideas but remain receptive to the insights of others and the elements of a fluctuating environment. This study investigates and empirically tests contemporary theory through the examination of organizations as cognitive entities. Two models are proposed and evaluated, which examined the relationship among organizational context, processes, and outcomes.

Initial Model: Organizational Cognitive Complexity

In order to effectively interpret and respond to the environment, organizations must match their internal variety to the complexities of the situation. Strategic decisions require organizations to attend to a multiplicity of internal and external factors. While a full interpretation of the initial model is hampered by the presence of unmodeled variation and high collinearity, several tentative statements about their

relationships can be made. A number of conclusions are drawn about the relationship between organizational context and strategic processes. Due to the presence of a suppressor effect, only provisional statements can be made about the relationships among the strategic processes and marketing outcomes.

Perceived Environmental Turbulence. Mixed results were demonstrated between perceived environmental turbulence and both strategic information exchange and organizational cognitive complexity. As organization become increasingly aware of changes in the environment, uncertainly increases. With high uncertainty, the need for information processing is heightened, particularly when dealing with complex, strategic issues. Interpreting a changing environment requires that decision-makers interact to reduce equivocality. This awareness of change is expected to build communication channels and organizational cognitive complexity so that the firm may implement an effective response.

The relationship between perceived environmental turbulence and increased strategic information exchange is supported in the case of market turbulence but not for technological turbulence. In other words, changes in customer preferences are communicated during marketing strategy, while changes in technology may not be. One possible explanation for this inconsistency is that market turbulence exists within the firm's microenvironment. Because changes in this aspect of the environment directly effect the firm's ability to create and sustain a competitive advantage, information is more readily shared among decision-makers while technological changes are not.

Another possible reason for the lack of support for technological turbulence may be sample specific. New technology is both a threat and an opportunity for the wholesale-distribution industry (Distribution Research & Education Foundation 1998). The results demonstrate that distributors are profoundly aware of this aspect of the environment. This is evidenced by the distribution of technological turbulence, which is skewed and peaked toward increasing perceptions of technological change (see Appendix D). A post-hoc assessment of the pretest, a non-industry specific sample, demonstrates a significant path ($\gamma_{22} = .36$, $P < .01$) between technological turbulence and organizational cognitive complexity. Therefore, there may not be sufficient variation in the measure to isolate the effect.

Though not strongly supported, the results indicate that awareness of a changing environment may promote organizational cognitive complexity. One possible reason for this weak result may be that awareness of environmental change is not sufficient to change organizational cognition. Results from a study by Barr, Stimpert, and Huff (1992) demonstrate that for cognitive change to occur organizations must be able to link environmental change to strategy. In the case of this study, organizations may be aware that markets and/or technologies are changing but may have difficulty relating this change to marketing strategy.

Open-mindedness. Strategy-making teams that are more willing to question current thinking and practices are more likely to communicate and consider differing perspectives. Open-mindedness helps to break down functional silos and formulaic thinking. Additionally, it fosters an environment in which individuals share their thoughts and ideas. This allows for the development of a shared understanding which

transcends interpretive differences. Open-minded cultures will question how business is conducted. This translates into a decision environment in which there is no single definition and solution for every strategic situation. Open-mindedness, therefore, performs an essential role in organizational strategic processes.

Team Functional Diversity. Only partial support was demonstrated for team functional diversity's impact on strategic information exchange and organizational cognitive complexity. Due to their complex nature, strategic situations are often beyond the information processing capacity of the individual. Teams in which multiple specialties are brought to the strategic decision-making task increase the level of experience and knowledge diversity. Functional diversity allows for more exposure to different information and skill bases. As more functional specialties are represented, decision-makers debate and communicate ideas. But, the effect of team functional diversity only indirectly impacts organizational cognitive complexity through its relationship with strategic information exchange.

Strategic Information Exchange. The results demonstrate support for the relationship between strategic information exchange and the development of organizational cognitive complexity. Exchanging information enables organizational members to form a shared understanding of the environment and the organization's role in it. Consensus is not always the goal of communication. Rather, communication allows for the development of a common understanding, which facilitates collective action despite interpretive differences. Therefore, strategic information exchange permits the development of organizational cognitive complexity and serves to increase the organization's capacity to consider multiple aspects of the environment.

Organizational Cognitive Complexity. As various perspectives come to be represented, the decision-making process is elaborated. Various issues, perspectives, and solutions are identified and related to the strategic situation. Less cognitively complex organizations perceive fewer relevant dimensions and apply simple rules in decision-making. Although simple solutions can be applied in some cases, marketing strategy-making often involves complex problems that require creative solutions. Organizational cognitive complexity serves to enrich the decision-making process allowing for a faster and greater variety of response.

Decision-making Complexity. Finally, the study examines whether there is a trade-off to complex decision-making. With a more complex strategic decision-making process, will a greater variety of response also slow the implementation of strategic marketing actions? The results confirm that both novel and timely marketing strategy occurs with an elaborated decision process. Therefore, a decision process in which more issues are integrated increases the range of possible strategic actions thus allowing for a quick and adaptive response.

Alternative Model: Organizational Strategic Sensemaking

For complex situations, organizations that develop complex internal processes are better able to sense and respond to the environment. This research demonstrates that organizational strategic sensemaking is represented by three processes: strategic information exchange, organizational cognitive complexity, and decision-making complexity. The alternative model results indicate that awareness of a changing microenvironment, open-mindedness, and representation by multiple functional specialties leads to the emergence of organizational understanding in which a variety of

viewpoints are integrated into a complex awareness. This emergent property is termed organizational strategic sensemaking. The use of which allows for formation and implementation of marketing strategies that are both creative and fast.

Implications of Findings

This study is among the first in marketing to examine interpretation issues in the context of their effect on efficiency (e.g., response timeliness) and effectiveness (e.g., creativity) of strategic marketing action. This study develops and validates new measures of cognitive complexity and macroenvironment and product orientation. By integrating theories in social psychology, sociology, management, and marketing, the research contributes to the cross-pollination of ideas. Additionally, this research further explores group-level cognitive processes (c.f. Madhavan and Grover 1998) and the formulation and implementation of marketing strategies (c.f. Varadarajan and Jayachandran 1999). The study of cognition and strategic decision-making aids in developing an understanding of the processes by which organizations makes sense of their environment and their role within it. This investigation also adds to the growing field of organizational sensemaking, an area of research that is still in its early stages (Meindl, Stubbart, and Porac 1994).

From a practitioner standpoint, the results would seem to indicate that too many cooks in the kitchen might not spoil the broth. From a design standpoint, bringing diverse perspective to bear on strategic decisions increases the level experience and knowledge. These differences in perspectives increase task-related conflict, which has been shown to positively influence marketing strategy (Menon, Bharadwaj, and Howell 1996). The key for executives is to nurture a culture of openness where ideas and

perspectives can be liberally shared and evaluated. There should also be a greater awareness that the environment is constantly in flux. Decision-makers can become comfortable with the status quo and not perceive the environmental change. Such organizations employ reactive strategies and run the risk of too-little-too-late. However, an awareness of continuous change encourages communication and promotes attention to those aspects that impact the firm's survival. Chief executives need to develop and maintain mechanisms, which enhance strategic processes. Complex problems require complex processes in order to achieve creative and fast solutions. Coordinating mechanisms of culture, structure, and environmental awareness encourage information exchange and the development of organizational understanding and thereby aid in efficient and effective strategies.

Limitations and Opportunities for Future Research

Study of the key factors that promote the development of organizational understanding of the information environment is critical to strategy formation and implementation research. This study takes a structural perspective by examining the organization's internal variety (contextual factors and strategic processes). Future research should examine particular content issues. For example, the impact of specific functions and orientations on strategic decision process and outcomes. Research on the role of marketing in the organization is key to this area of inquiry (Homburg, Workman, and Krohmer 1999; Workman 1993; Workman, Homburg, and Gruner 1998). Also, studies which have looked at particular strategic orientations and their impact on organizational behavior and performance (Day and Nedungadi 1994; Narver and Slater

1990; Slater and Narver 1994, 1995) can be extended by looking across a greater variety of strategic orientations.

Additional research should also examine the impact of differences in perceptual agreement among organizational decision-makers. There are several methodological considerations to this type of investigation. First multiple informants from the same organization will need to be surveyed. Prior research using multiple informants has eliminated differences by asking informants to reconcile them (Kumar, Stern, and Achrol 1992). However, modeling this variation would have implications for strategic research. Certain techniques, such as hierarchical linear modeling, might allow for the representation of differences about specific strategic issues and their impact on strategic processes and outcomes.

This dissertation relies upon cross-sectional data, yet there is an implicit sequential order to the development and use of schema (see Figure 1). There may also be a number of causal loops among the factors. For instance, schema use may impact future schema development. A longitudinal study would further clarify the causal order between context, strategic processes, action, and outcomes. Further research employing multiple methods would isolate these effects.

An additional study should be undertaken to confirm the results and the alternative model representation. While the final study's sample was comprised of different types of organizations, each came from the same industry. To further test the validity of the model, similar research should be conducted in the manufacturing or service sector, as well as in a not-for-profit context. Finally, another study based on a

different sample would validate the higher-order representation of organizational strategic sensemaking.

Additionally, the contextual factors, strategic processes, and organizational outcomes need to be examined to a greater extent. The vast literature on information processes and organizational learning should be explored in conjunction with this study's findings. Specifically, how do specific search strategies (Slater and Narver 1997), forms of memory (Moorman and Miner 1997, 1998b), and decision support systems (Wierenga and van Bruggen 1997) impact organizational understanding? The ultimate test for any organizational cognition theory is performance. Further study of the cognition-performance relationship will need to be specified and empirically tested. Also, future research should examine the manner in which organizational strategic sensemaking impacts the relationship between improvisation, in which planning and execution converge (c.f., Moorman and Miner 1998a, 1998b), and performance.

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APPENDIX A: PRETEST QUESTIONNAIRE

Please answer each statement below in terms of your organization. From this perspective, try to recall a recent or memorable strategy formulation and implementation effort. By strategy, we mean the development and maintenance of a fit between the organization's capabilities and its evolving market environment. Examples might include: a major capital acquisition, new product development, market expansion/penetration effort, and/or new competitive response. Throughout the survey, focus on the organization as a whole and not just your personal involvement.

Section I – The Nature of the Organization

For each of the following functional areas, indicate the number of organizational members who participate in strategic planning. If a functional area is not represented, place a "0" in the space provided.

____ Accounting
____ Finance
____ Human Resource
____ Information Technology/Systems
____ Legal
____ Marketing/Sales/Customer Service
____ Operations/Production
____ Public Relations
____ Research and Development
____ Other:

Indicate the extent to which you agree that each statement below describes your organization. Use the scale: 1=Strongly Disagree and 5= Strongly Agree.

	Strongly Disagree				Strongly Agree
Managers in this organization are open to questioning of their "view of the world."	①	②	③	④	⑤
Our business unit places a high value on open-mindedness.	①	②	③	④	⑤
Managers encourage employees to "think outside the box."	①	②	③	④	⑤
An emphasis on constant innovation is part of our corporate culture.	①	②	③	④	⑤
Original ideas are highly valued in this organization.	①	②	③	④	⑤
We are not afraid to reflect critically on the shared assumptions we have about the way we do business.	①	②	③	④	⑤

Section II – The Organizational Environment

This series of statements seeks to understand your organization's perception of its external environment. For each statement indicate your level of agreement on a five point scale, 1=Strongly Disagree and 5=Strongly Agree.

	Strongly Disagree				Strongly Agree
In our kind of business, customers' product preferences change quite a bit over time.	①	②	③	④	⑤
Our customers tend to look for new products all the time.	①	②	③	④	⑤
We are witnessing demand for our products and services from customers who never bought them before.	①	②	③	④	⑤
New customers tend to have product-related needs that are different from those of our existing customers.	①	②	③	④	⑤
We cater to many of the same customers that we used to in the past.	①	②	③	④	⑤
The technology in our industry is changing rapidly.	①	②	③	④	⑤
Technological changes provide big opportunities in our industry.	①	②	③	④	⑤
Technological developments in our industry are rather minor.	①	②	③	④	⑤
A large number of new product ideas have been made possible through technological breakthroughs in our industry.	①	②	③	④	⑤

Section III – Strategic Posture

The next section is fairly long, but it is extremely important that you provide a thoughtful response to each statement. In answering, please use the following scale and bubble the most appropriate number.

Not at all	To a very slight extent	To a small extent	To a moderate extent	To a considerable extent	To a great extent	To an extreme extent
1	2	3	4	5	6	7

To what extent does the organization engage in the following practices:

Our competitive advantage depends on understanding conditions in the larger environment.	① ② ③ ④ ⑤ ⑥ ⑦
The key to our organization's success is through technological superiority.	① ② ③ ④ ⑤ ⑥ ⑦
We are always seeking ways to improve the production of our products and/or services.	① ② ③ ④ ⑤ ⑥ ⑦
We target customers where we have an opportunity for competitive advantage.	① ② ③ ④ ⑤ ⑥ ⑦
We constantly monitor our level of commitment and orientation to serving customer's needs.	① ② ③ ④ ⑤ ⑥ ⑦
Our organization is constantly seeking process improvements.	① ② ③ ④ ⑤ ⑥ ⑦
Our organization actively engages in system improvements as a way to enhance product/service quality while lowering costs.	① ② ③ ④ ⑤ ⑥ ⑦
We strive to be the technological leader in our industry.	① ② ③ ④ ⑤ ⑥ ⑦
Our business strategies are based on our ability to integrate new technologies.	① ② ③ ④ ⑤ ⑥ ⑦
Our strategic success is based on our understanding of emerging market trends.	① ② ③ ④ ⑤ ⑥ ⑦
Our business objectives are shaped by issues outside of our immediate industry.	① ② ③ ④ ⑤ ⑥ ⑦
We often seek ways to increase throughput capacity.	① ② ③ ④ ⑤ ⑥ ⑦
Our strategy for competitive advantage is based on our understanding of customers' needs.	① ② ③ ④ ⑤ ⑥ ⑦
Our business strategies are driven by our beliefs about how we can create greater value for customers.	① ② ③ ④ ⑤ ⑥ ⑦
We are always seeking sophisticated technologies for our product development.	① ② ③ ④ ⑤ ⑥ ⑦
In determining our strategic direction, we search for trends emerging outside our industry.	① ② ③ ④ ⑤ ⑥ ⑦
We give close attention to after-sales service.	① ② ③ ④ ⑤ ⑥ ⑦
Our strategy includes converting trends outside our industry into business opportunities.	① ② ③ ④ ⑤ ⑥ ⑦
We seek to develop new technologies before others in our industry.	① ② ③ ④ ⑤ ⑥ ⑦
We detect changes in the outside environment before most other firms.	① ② ③ ④ ⑤ ⑥ ⑦
In developing strategy, we seek to capitalize on environmental opportunities before others in our industry.	① ② ③ ④ ⑤ ⑥ ⑦
Our business strategies are driven towards routinizing organizational activities.	① ② ③ ④ ⑤ ⑥ ⑦
Our business objectives are driven primarily by customer satisfaction.	① ② ③ ④ ⑤ ⑥ ⑦
We rapidly respond to competitive actions that threaten us.	① ② ③ ④ ⑤ ⑥ ⑦
Our new products are always at the state of the art in technology.	① ② ③ ④ ⑤ ⑥ ⑦
We measure customer satisfaction systematically and frequently.	① ② ③ ④ ⑤ ⑥ ⑦
Our organizational objectives are directly influenced by trends outside our industry.	① ② ③ ④ ⑤ ⑥ ⑦
Our salespeople regularly share information within our business concerning competitors' strategies.	① ② ③ ④ ⑤ ⑥ ⑦
Top management regularly discusses competitors' strengths and strategies.	① ② ③ ④ ⑤ ⑥ ⑦
We pay close attention to conditions outside of our industry.	① ② ③ ④ ⑤ ⑥ ⑦
Our business objectives are driven towards producing the highest quality products/services.	① ② ③ ④ ⑤ ⑥ ⑦

Section IV – Organizational Information Processes

This section explores the information activities of the organization. Again, we remind you to try to recall a recently developed strategy. For each statement, indicate your level of agreement using the following scale:

Strongly Disagree	Disagree	Slightly Disagree	Undecided	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

	Strongly Disagree						Strongly Agree
In developing the most recent strategy, key decision-makers had formal or informal processes							
for continuously collecting information from customers.	①	②	③	④	⑤	⑥	⑦
for continuously collecting information about competitors' activities.	①	②	③	④	⑤	⑥	⑦
for continuously collecting information about relevant publics other than customers and competitors.	①	②	③	④	⑤	⑥	⑦
for continuously reexamining the value of information collected in previous studies.	①	②	③	④	⑤	⑥	⑦
for continuously collecting information from external experts, such as consultants.	①	②	③	④	⑤	⑥	⑦
for sharing information effectively between departments.	①	②	③	④	⑤	⑥	⑦
for sharing information effectively within departments.	①	②	③	④	⑤	⑥	⑦
In developing the most recent strategy, the organization							
had formal information links established between all parties involved in the project.	①	②	③	④	⑤	⑥	⑦
had informal networks that ensured decision makers generally had the information they needed.	①	②	③	④	⑤	⑥	⑦
employed people who were willing to educate others during the project.	①	②	③	④	⑤	⑥	⑦
took the necessary time to properly train employees in new tasks relating to this project.	①	②	③	④	⑤	⑥	⑦

	Strongly Disagree						Strongly Agree
In developing the most recent strategy, the organization							
considered problems using multiple perspectives.	①	②	③	④	⑤	⑥	⑦
considered a wide variety of solutions.	①	②	③	④	⑤	⑥	⑦
relied on diverse information for finding solutions.	①	②	③	④	⑤	⑥	⑦
held multiple viewpoints on possible causes of the situation.	①	②	③	④	⑤	⑥	⑦
discussed novel perspectives in seeking solutions.	①	②	③	④	⑤	⑥	⑦
formulated a number of potential solutions from many differing perspectives.	①	②	③	④	⑤	⑥	⑦
relied on diverse information for determining solutions.	①	②	③	④	⑤	⑥	⑦
gave due consideration to divergent ideas.	①	②	③	④	⑤	⑥	⑦
selected solutions using multiple perspectives.	①	②	③	④	⑤	⑥	⑦
explored multiple solutions.	①	②	③	④	⑤	⑥	⑦
considered multiple viewpoints in deciding on a course of action.	①	②	③	④	⑤	⑥	⑦
took differing perspectives into account when deciding on a solution.	①	②	③	④	⑤	⑥	⑦
reflected on problems from multiple vantagepoints.	①	②	③	④	⑤	⑥	⑦
sought solutions by considering a diverse set of perspectives.	①	②	③	④	⑤	⑥	⑦
viewed each solution from all angles.	①	②	③	④	⑤	⑥	⑦
gave due consideration to divergent explanations of problems.	①	②	③	④	⑤	⑥	⑦
based solutions on viewpoints from multiple organizational members.	①	②	③	④	⑤	⑥	⑦
explored problems from differing perspectives.	①	②	③	④	⑤	⑥	⑦
positioned problems within multiple contexts.	①	②	③	④	⑤	⑥	⑦

Section V – Organizational Strategy

The following statements seek to describe your organization's most recent strategic plan. For each statement, indicate your level of agreement on a five point scale, 1=Strongly Disagree and 5=Strongly Agree.

	Strongly Disagree				Strongly Agree
The chosen strategy was very different from others developed in the past.	①	②	③	④	⑤
The strategy included some new aspects compared to previous strategies.	①	②	③	④	⑤
The strategy broke some of the "rules of the game" within the product/market.	①	②	③	④	⑤
The strategy was innovative.	①	②	③	④	⑤
Compared to our previous, similar strategies, at least some parts were daring, risky, or bold.	①	②	③	④	⑤
It takes us very little time to answer to competitive pressure with a strategy of our own.	①	②	③	④	⑤
We tend to execute a rapid response to changes in our customers' product or service needs.	①	②	③	④	⑤
If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately.	①	②	③	④	⑤
In this organization, strategy implementation could be characterized as "rapid."	①	②	③	④	⑤
We are able to move quickly from the strategy's development to its use or abandonment.	①	②	③	④	⑤
Changes in our industry are soon met with changes in our organization's strategy.	①	②	③	④	⑤
We are able to implement a strategy in a timely fashion.	①	②	③	④	⑤
Our strategic response echoes the rate of change within our industry.	①	②	③	④	⑤

Section VI – Respondent and Organizational Profile

Please indicate your level of work experience:

① 5 years or less
② 6 to 10 years
③ 11 to 15 years
④ 16 to 20 years
⑤ More than 20 years

What is your position in the organization?

① Entry
② Staff
③ Middle management
④ Upper management
⑤ Other

Please indicate your level of involvement in strategic planning in your organization:

Not at all	To a very slight extent	To a small extent	To a moderate extent	To a considerable extent	To a great extent	To an extreme extent
①	②	③	④	⑤	⑥	⑦

Please indicate the number of employees in the organization:

① 1 - 4
② 5 - 9
③ 10 - 19
④ 20 - 49
⑤ 50 - 99
⑥ 100 - 249
⑦ 250 - 499
⑧ 500 - 999
⑨ 1,000 - 4,999
⑩ 5,000 - 9,999
⑪ 10,000 or more

Please indicate the organization's annual sales volume

① Less than $500,000
② $500,000 - $1 million
③ $1 - $2.5 million
④ $2.5 - $5 million
⑤ $5 - $10 million
⑥ $10 - $20 million
⑦ $20 - $50 million
⑧ $50 - $100 million
⑨ $100 - $500 million
⑩ $500 million - $1 billion
⑪ Over $1 billion

Thank you for completing this survey.

APPENDIX B: FINAL QUESTIONNAIRE

Wholesale Distribution Marketing Strategies

A Study
Conducted by the
Department of Marketing
Louisiana State University

Questionnaire Instructions

Throughout the survey, please keep the following points in mind:

1. Focus on the organization as a whole and not just your personal involvement.

2. This survey examines *strategic marketing decisions* in your organization. Examples of strategic marketing decisions might include: venture into a new market, product, or service area; price adjustment; market expansion/penetration effort; new advertising campaign; or some other marketing decision that requires a significant resource commitment.

3. Respondents should have organization-wide responsibilities and be actively involved in the formulation and implementation of your organization's strategic marketing decisions.

Section I – Organizational Information Processes

In this section, indicate your level of agreement for each statement using the following scale:

Strongly Disagree	Disagree	Slightly Disagree	Undecided	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

In making strategic marketing decisions, managers in our organization:

	Strongly Disagree						Strongly Agree
... have formal information links established between all parties involved in decisions.	①	②	③	④	⑤	⑥	⑦
... have formal or informal processes for sharing information effectively between departments.	①	②	③	④	⑤	⑥	⑦
... have informal networks that ensure decision makers generally have the information they need.	①	②	③	④	⑤	⑥	⑦
... employ people who are willing to educate others.	①	②	③	④	⑤	⑥	⑦
... take the necessary time to properly train employees in new tasks relating to such decisions.	①	②	③	④	⑤	⑥	⑦
... have formal or informal processes for sharing information effectively within departments.	①	②	③	④	⑤	⑥	⑦

Using the same scale as above, indicate your level of agreement to the following statements.

	Strongly Disagree						Strongly Agree
We have regular interdepartmental meetings to discuss market trends and developments.	①	②	③	④	⑤	⑥	⑦
Marketing personnel in our business spend time discussing customers' future needs with other functional departments.	①	②	③	④	⑤	⑥	⑦
When something important happens to a major customer or market, the whole business knows about it in a short period.	①	②	③	④	⑤	⑥	⑦
Data on customer satisfaction are disseminated at all levels of the organization on a regular basis.	①	②	③	④	⑤	⑥	⑦
When one department finds out something important about competitors, it is quick to alert other departments.	①	②	③	④	⑤	⑥	⑦
Major changes in our industry are communicated throughout the organization.	①	②	③	④	⑤	⑥	⑦
Important developments outside our industry are shared across departments.	①	②	③	④	⑤	⑥	⑦

In this section, indicate the extent to which each of the following types of information sources are used during strategic marketing decision-making. Use the scale 1=None and 7=A lot.

In determining strategic actions, how much information is:

	None						A lot
Face-to-face	①	②	③	④	⑤	⑥	⑦
Phone	①	②	③	④	⑤	⑥	⑦
E-mail	①	②	③	④	⑤	⑥	⑦
Management/executive information system	①	②	③	④	⑤	⑥	⑦

Section II – The Nature of the Organization

Please indicate the number of people from each of the following functional specialties that actively participate in strategic marketing decision-making in your organization. The individual may be an employee or external advisor (e.g., CPA, legal counsel, consultant, board member,...). Place a "0" in the space provided if a functional specialty is not represented.

____ Accounting	____ Marketing/Sales/Customer Service
____ Finance	____ Operations/Production
____ Human Resource	____ Public Relations
____ Information Technology/Systems	____ Research and Development
____ Legal	____ Other: *(please specify)* _____

Indicate the extent to which you agree that each statement below describes your organization. Use the scale: 1=Strongly Disagree and 7=Strongly Agree.

	Strongly Disagree						Strongly Agree
Managers in this organization are open to questioning of their "view of the world."	①	②	③	④	⑤	⑥	⑦
Our organization places a high value on open-mindedness.	①	②	③	④	⑤	⑥	⑦
Managers encourage employees to "think outside the box."	①	②	③	④	⑤	⑥	⑦
An emphasis on constant innovation is part of our corporate culture.	①	②	③	④	⑤	⑥	⑦
Original ideas are highly valued in this organization.	①	②	③	④	⑤	⑥	⑦
We are not afraid to reflect critically on the shared assumptions we have about the way we do business.	①	②	③	④	⑤	⑥	⑦

Section III – The Organization's External Environment

This series of statements seeks to understand your organization's perception of its external environment. For each statement indicate your level of agreement on a seven point scale, 1=Strongly Disagree and 7=Strongly Agree.

	Strongly Disagree						Strongly Agree
In our kind of business, customer preferences change quite a bit over time.	①	②	③	④	⑤	⑥	⑦
Our customers tend to look for new services all the time.	①	②	③	④	⑤	⑥	⑦
We are witnessing demand for our services from customers we have never served before.	①	②	③	④	⑤	⑥	⑦
New customers tend to have service-related needs that are different from those of our existing customers.	①	②	③	④	⑤	⑥	⑦
We cater to few of the same customers that we used to in the past.	①	②	③	④	⑤	⑥	⑦
The technology in our industry is changing rapidly.	①	②	③	④	⑤	⑥	⑦
Technological changes provide big opportunities in our industry.	①	②	③	④	⑤	⑥	⑦
Technological developments in our industry are important.	①	②	③	④	⑤	⑥	⑦
A large number of new service ideas have been made possible through technological breakthroughs in our industry.	①	②	③	④	⑤	⑥	⑦
Competition in our industry is cutthroat.	①	②	③	④	⑤	⑥	⑦
There are many "promotional wars" in our industry.	①	②	③	④	⑤	⑥	⑦
Anything that one competitor can offer, others can match readily.	①	②	③	④	⑤	⑥	⑦
Price competition is a hallmark of our industry.	①	②	③	④	⑤	⑥	⑦
One hears of a new competitive move almost every day.	①	②	③	④	⑤	⑥	⑦
Our competitors are relatively strong.	①	②	③	④	⑤	⑥	⑦

Section IV – The Organization's Marketing Strategy

The next set of statements seeks to understand the strategic marketing decision-making process within your organization. For each statement, indicate your level of agreement on a seven point scale. 1=Strongly Disagree and 7=Strongly Agree.

In developing marketing strategy, our organization:

	Strongly Disagree						Strongly Agree
... relies on diverse information for finding solutions.	①	②	③	④	⑤	⑥	⑦
... takes differing perspectives into account when deciding on a solution.	①	②	③	④	⑤	⑥	⑦
... gives due consideration to divergent ideas.	①	②	③	④	⑤	⑥	⑦
... discusses novel perspectives in seeking solutions.	①	②	③	④	⑤	⑥	⑦
... selects solutions using multiple perspectives.	①	②	③	④	⑤	⑥	⑦
... reflects on problems from multiple vantagepoints.	①	②	③	④	⑤	⑥	⑦
... bases solutions on viewpoints from multiple organizational members.	①	②	③	④	⑤	⑥	⑦
... seeks solutions by considering a diverse set of perspectives.	①	②	③	④	⑤	⑥	⑦
... gives due consideration to divergent explanations of problems.	①	②	③	④	⑤	⑥	⑦
... positions problems within multiple contexts.	①	②	③	④	⑤	⑥	⑦
... views each solution from all angles.	①	②	③	④	⑤	⑥	⑦
... explores problems from differing perspectives.	①	②	③	④	⑤	⑥	⑦

The following statements seek to describe your organization's strategic marketing actions.

	Strongly Disagree						Strongly Agree
We tend to implement marketing strategies that are very different from others developed in the past.	①	②	③	④	⑤	⑥	⑦
Our marketing strategies include some new aspects compared to previous strategies.	①	②	③	④	⑤	⑥	⑦
Our chosen marketing strategies tend to break some of the "rules of the game" within our market.	①	②	③	④	⑤	⑥	⑦
In this organization, marketing strategies are innovative.	①	②	③	④	⑤	⑥	⑦
At least some parts of this organization's marketing strategies are daring, risky, or bold.	①	②	③	④	⑤	⑥	⑦
It takes us very little time to answer to competitive pressure with a marketing strategy of our own.	①	②	③	④	⑤	⑥	⑦
We tend to execute a rapid response to changes in our customers' service needs.	①	②	③	④	⑤	⑥	⑦
If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately.	①	②	③	④	⑤	⑥	⑦
In this organization, marketing strategy implementation could be characterized as "rapid."	①	②	③	④	⑤	⑥	⑦
We are able to move quickly from a marketing strategy's development to its use or abandonment.	①	②	③	④	⑤	⑥	⑦
Changes in our industry are quickly met with changes in our organization's marketing strategy.	①	②	③	④	⑤	⑥	⑦
We are able to implement a marketing strategy in a timely fashion.	①	②	③	④	⑤	⑥	⑦

In our organization, strategic marketing action can be characterized as:

Figured out as we went along	① ② ③ ④ ⑤ ⑥ ⑦	Followed an action plan
Improvised	① ② ③ ④ ⑤ ⑥ ⑦	Strictly followed our plan
Ad-libbed	① ② ③ ④ ⑤ ⑥ ⑦	Not ad-libbed

Section V – Strategic Orientation

For each of the following statement, please indicate the response that most closely describes your organization.

	Strongly Disagree						Strongly Agree
The key to our organization's success is through technological superiority.	①	②	③	④	⑤	⑥	⑦
We are always seeking ways to improve the delivery of our services.	①	②	③	④	⑤	⑥	⑦
We target customers where we have an opportunity for competitive advantage.	①	②	③	④	⑤	⑥	⑦
We constantly monitor our level of commitment to serving customer's needs.	①	②	③	④	⑤	⑥	⑦
Our organization is constantly seeking process improvements.	①	②	③	④	⑤	⑥	⑦
Our organization actively engages in system improvements as a way to enhance service quality while lowering costs.	①	②	③	④	⑤	⑥	⑦
We strive to be the technological leader in our industry.	①	②	③	④	⑤	⑥	⑦
Our business strategies are based on our ability to integrate new technologies.	①	②	③	④	⑤	⑥	⑦
Our strategic success is based on our understanding of emerging market trends.	①	②	③	④	⑤	⑥	⑦
Our business objectives are shaped by issues outside of our immediate industry.	①	②	③	④	⑤	⑥	⑦
We often seek ways to increase throughput capacity.	①	②	③	④	⑤	⑥	⑦
Our strategy for competitive advantage is based on our understanding of customers' needs.	①	②	③	④	⑤	⑥	⑦
Our business strategies are driven by our beliefs about how we can create greater value for customers.	①	②	③	④	⑤	⑥	⑦
We are always seeking sophisticated technologies for use in service delivery.	①	②	③	④	⑤	⑥	⑦
In determining our strategic direction, we search for trends emerging outside our industry.	①	②	③	④	⑤	⑥	⑦
We give close attention to after-sales service.	①	②	③	④	⑤	⑥	⑦
Our strategy includes converting trends outside our industry into business opportunities.	①	②	③	④	⑤	⑥	⑦
We seek to develop new technologies before others in our industry.	①	②	③	④	⑤	⑥	⑦
We detect changes in the outside environment before most other firms.	①	②	③	④	⑤	⑥	⑦
In developing strategy, we seek to capitalize on environmental opportunities before others in our industry.	①	②	③	④	⑤	⑥	⑦
Our business objectives are driven primarily by customer satisfaction.	①	②	③	④	⑤	⑥	⑦
We rapidly respond to competitive actions that threaten us.	①	②	③	④	⑤	⑥	⑦
Our new services are always at the state of the art in technology.	①	②	③	④	⑤	⑥	⑦
We measure customer satisfaction systematically and frequently.	①	②	③	④	⑤	⑥	⑦
Our organizational objectives are directly influenced by trends outside our industry.	①	②	③	④	⑤	⑥	⑦
Our salespeople regularly share information within our business concerning competitors' strategies.	①	②	③	④	⑤	⑥	⑦
Top management regularly discusses competitors' strengths and strategies.	①	②	③	④	⑤	⑥	⑦
We pay close attention to conditions outside of our industry.	①	②	③	④	⑤	⑥	⑦
Our business objectives are driven towards producing the highest quality services.	①	②	③	④	⑤	⑥	⑦

Section VI – Organizational Performance

In regard to other distributors or agents/brokers in our industry, how would you rate your organization's performance over the last year in terms of:

	Significantly worse performance than others in the industry			Typical of others in this industry ↓			Significantly better performance than others in the industry	Don't know
Sales growth	①	②	③	④	⑤	⑥	⑦	⑧
Profit growth	①	②	③	④	⑤	⑥	⑦	⑧
Overall profitability	①	②	③	④	⑤	⑥	⑦	⑧
Liquidity	①	②	③	④	⑤	⑥	⑦	⑧
Labor productivity	①	②	③	④	⑤	⑥	⑦	⑧
Cash flow	①	②	③	④	⑤	⑥	⑦	⑧
Customer satisfaction	①	②	③	④	⑤	⑥	⑦	⑧
Delivering customer value	①	②	③	④	⑤	⑥	⑦	⑧
Customer loyalty	①	②	③	④	⑤	⑥	⑦	⑧

Section VII – Respondent and Organizational Profile

Please indicate the number of organizational employees:

- ⓪ 1 - 4
- ① 5 - 9
- ② 10 - 19
- ③ 20 - 49
- ④ 50 - 99
- ⑤ 100 - 249
- ⑥ 250 - 499
- ⑦ 500 - 999
- ⑧ 1,000 - 4,999
- ⑨ 5,000 - 9,999
- ⑩ 10,000 or more

Please indicate your current position in the organization:

- ① CEO/President
- ② Vice President
- ③ Middle Management
- ④ Staff
- ⑤ Other *(please specify)* _____

Please indicate your level of work experience at this organization:

- ① 5 years or less
- ② 6 to 10 years
- ③ 11 to 15 years
- ④ 16 to 20 years
- ⑤ More than 20 years

Please indicate the organization's annual sales volume:

- ⑩ Less than $500,000
- ① $500,000 - $1 million
- ② $1 - $2.5 million
- ③ $2.5 - $5 million
- ④ $5 - $10 million
- ⑤ $10 - $20 million
- ⑥ $20 - $50 million
- ⑦ $50 - $100 million
- ⑧ $100 - $500 million
- ⑨ $500 million - $1 billion
- ⑩ Over $1 billion

Please indicate your level of work experience at this position:

- ① 5 years or less
- ② 6 to 10 years
- ③ 11 to 15 years
- ④ 16 to 20 years
- ⑤ More than 20 years

Please indicate your level of involvement in strategic planning in your organization:

- ① Not at all
- ② To a very slight extent
- ③ To a small extent
- ④ To a moderate extent
- ⑤ To a considerable extent
- ⑥ To a great extent
- ⑦ To an extreme extent

Please indicate the functional specialty which best describes your role within the organization:

- ① Accounting
- ② Finance
- ③ Human Resource
- ④ Information Technology/Systems
- ⑤ Legal
- ⑥ Marketing/Sales/Customer Service
- ⑦ Operations/Production
- ⑧ Public Relations
- ⑨ Research and Development
- ⑩ Other: *(please specify)* _____

Thank you for completing this questionnaire. Please return in the postage paid envelope today.

Department of Marketing
Louisiana State University
3127 CEBA Building
Baton Rouge, LA 70803-6314

APPENDIX C: COVER LETTERS AND POSTCARD

LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
E. J. Ourso College of Business Administration • Department of Marketing

September 22, 1999

«MAIN_CONTACT»
«COMPANY_NAME»
«ADDRESS_1»
«ADDRESS_2»
«CITY», «STATE» «ZIP»

Dear «title» «l_name»:

As you know, distribution firms are operating in an increasingly competitive and fast-changing business environment. Executives are seeking strategies for coping with the accelerating flow of information and innovation. We are conducting a study, endorsed by both the *National Association of Wholesaler-Distributors* and the *«Association»*, on how firms in the wholesale distribution industry formulate and implement strategic decisions.

Having been drawn from a random sample of distributors, your organization is one of a small number being asked to provide information on these matters. In order that the results be truly representative, it is important that each questionnaire be completed and returned. It is also important that an individual with organization-wide responsibilities, who is actively involved in strategic marketing decisions, complete the questionnaire.

The study is part of a research program being conducted by the Marketing Department at Louisiana State University. All information you provide will be kept strictly confidential. The questionnaire has an identification number for mailing purposes only. This is so that we may check your name off of the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire.

We appreciate your honest and thoughtful response to each statement. Some statements may seem repetitive, but they are part of standardized measures. If you wish to receive a summary of the findings for benchmarking purposes, please include a business card with your completed questionnaire.

Thank you for your assistance.

Sincerely,

Stern Neill
Program Director

1227 CEBA • Baton Rouge • Louisiana • 70803-6314 • 225/388-0684 • FAX 225/388-6816

LOUISIANA STATE UNIVERSITY
and Agricultural and Mechanical College
E. J. Ourso College of Business Administration • Department of Marketing

October 18, 1999

«MAIN_CONTACT»
«COMPANY_NAME»
«ADDRESS_1»
«ADDRESS_2»
«CITY», «STATE» «ZIP»

Dear «title» «l_name»:

About three weeks ago, I wrote to you seeking your assessment on how your firm formulates and implements strategic marketing decisions. As of today, I have not yet received your completed questionnaire.

Our research unit has undertaken this study, with the endorsement of both the *National Association of Wholesaler-Distributors* and the *«Association»*, because firms like yours are facing an increasingly competitive and fast-changing business environment.

I am writing to you again because of the significance each questionnaire has to the usefulness of this study. Your name is one of a select few drawn from the membership of the «Association». In order for the results to be truly representative of distributors in the «industry» industry, it is essential that each firm in the sample return the questionnaire. As mentioned in our last letter, the questionnaire for your organization should be completed by an individual with organization-wide responsibilities, who is actively involved in strategic marketing decisions.

In the event that your questionnaire has been misplaced, a replacement is enclosed. If you wish to receive a summary of the findings for benchmarking purposes, please include a business card with your completed questionnaire.

Your cooperation is greatly appreciated.

Sincerely,

Stern Neill
Program Director

1x2x CEBA • Baton Rouge • Louisiana • 70803 6316 • 225/388 8686 • FAX 225/388 8614

LOUISIANA STATE UNIVERSITY
3127 CEBA Building
Louisiana State University
Baton Rouge, LA 70803-6314

September 29, 1999

Last week a questionnaire, seeking your opinion about how your organization formulates and implements strategic decisions, was mailed to you. Your name was drawn from a random sample of wholesaler-distributors.

If you have already completed and returned it to us, please accept our sincere thanks. If not, please do so today. Because it has been sent to only a small, but representative, sample of distributors, it is extremely important that yours also be included in the study if the results are to accurately represent the strategic behavior of distributor firms.

If by some chance you did not receive the questionnaire or it got misplaced, please call (collect @ 225/381-7443) or email (sneill@lsu.edu) me right now and I will get another in the mail to you today.

Sincerely,

Stern Neill
Department of Marketing, Louisiana State University

APPENDIX D: MEASURES OF CONSTRUCTS

Table 21: Organizational Cognitive Complexity Dimensions: Descriptive Statistics

Study 1	Competitor	Customer	Macro	Product
Mean	4.48	5.18	5.20	4.31
Std. Deviation	1.38	1.25	1.18	1.27
Skewness	-0.33	-0.71	-0.60	-0.38
$Z_{skewness}$	-1.90	-4.17	-3.47	-2.21
Kurtosis	-0.36	0.45	-0.20	-0.55
$Z_{kurtosis}$	-1.04	1.31	-0.57	-1.59
N	88	88	88	88

Study 2	Competitor	Customer	Macro	Product
Mean	5.43	5.66	4.14	5.74
Std. Deviation	0.99	0.82	1.15	0.87
Skewness	-0.76	-0.57	-0.16	-0.43
$Z_{skewness}$	-4.41	-3.34	-0.92	-2.50
Kurtosis	0.51	0.16	-0.42	-0.17
$Z_{kurtosis}$	1.50	0.46	-1.22	-0.49
N	203	202	202	204

Table 22: Organizational Cognitive Complexity Dimensions: Confirmatory Factor Analysis Loadings

Organizational Cognitive Complexity Dimension	Study1	Study2
Competitor Orientation		
We target customers where we have an opportunity for competitive advantage.	.55	--
We rapidly respond to competitive actions that threaten us.	.72	.63
Our salespeople regularly share information within our business concerning competitors' strategies.	.74	.67
Top management regularly discusses competitors' strengths and strategies.	.88	.75
Customer Orientation		
We constantly monitor our level of commitment to serving customer's needs.	.81	.69
Our strategy for competitive advantage is based on our understanding of customers' needs.	.86	.73
Our business strategies are driven by our beliefs about how we can create greater value for customers.	.70	.78
We give close attention to after-sales service.	.63	.61
Our business objectives are driven primarily by customer satisfaction.	.80	.71
We measure customer satisfaction systematically and frequently.	.79	--
Product Orientation		
Our business strategies are driven towards routinizing organizational activities.	--	--
We are always seeking ways to improve the delivery of our services.	.72	.71
Our organization is constantly seeking process improvements.	.83	.72
Our organization actively engages in system improvements as a way to enhance service quality while lowering costs.	.82	--
We often seek ways to increase throughput capacity.	.62	--
Our business objectives are driven towards producing the highest quality services.	.61	.73

(table continued)

(Table 22 continued)

Macroenvironmental Orientation		
Our strategic success is based on our understanding of emerging market trends.	.69	--
Our business objectives are shaped by issues outside of our immediate industry.	.66	--
In determining our strategic direction, we search for trends emerging outside our industry.	.79	.77
Our strategy includes converting trends outside our industry into business opportunities.	.83	.80
We detect changes in the outside environment before most other firms.	.70	.64
In developing strategy, we seek to capitalize on environmental opportunities before others in our industry.	.53	--
Our organizational objectives are directly influenced by trends outside our industry.	.75	.73
We pay close attention to conditions outside of our industry.	.78	.80
Our competitive advantage depends on understanding conditions in the larger environment.	--	--

Table 23: Full Measurement Model: Descriptive Statistics

Study 1	SIE	OCC	DMC	MSC[†]	MSRT[†]	MTRB[†]	TTRB[†]	OPM[†]	TFD
Mean	4.93	4.62	4.98	3.32	3.36	2.92	3.52	3.74	1.31
Std. Deviation	1.19	1.06	1.02	0.81	0.93	0.93	0.96	0.79	0.78
Skewness	-0.58	-0.42	-0.51	-0.14	-0.45	-0.27	-0.44	-0.55	-0.85
$Z_{skewness}$	-3.36	-2.46	-2.95	-0.79	-2.64	-1.56	-2.59	-3.21	-4.94
Kurtosis	-0.17	-0.06	0.84	-0.32	-0.24	-0.52	-0.06	0.20	-0.24
$Z_{kurtosis}$	-0.49	-0.18	2.45	-0.93	-0.69	-1.51	-0.19	0.59	-0.71
N	88	88	88	87	87	88	88	87	70

Study 2	SIE	OCC	DMC	MSC	MSRT	MTRB	TTRB	OPM	TFD
Mean	4.72	5.24	5.24	4.85	5.18	4.76	5.66	5.83	1.48
Std. Deviation	1.14	0.75	0.94	1.04	1.09	1.17	1.11	0.93	0.45
Skewness	-0.50	-0.33	-0.69	-0.43	-0.82	-0.40	-1.15	-0.89	-0.70
$Z_{skewness}$	-2.90	-1.91	-4.04	-2.49	-4.79	-2.34	-6.70	-5.21	-4.08
Kurtosis	-0.36	-0.08	0.90	-0.11	0.78	-0.62	1.49	0.88	0.61
$Z_{kurtosis}$	-1.06	-0.22	2.63	-0.32	2.26	-1.81	4.34	2.55	1.78
N	201	203	201	203	204	203	202	202	198

[†] A number of measures in study one were evaluated on a five-point scale.

NOTE: SIE = Strategic Information Exchange; OCC = Organizational Cognitive Complexity; DMC = Decision-making Complexity; MSC = Marketing Strategy Creativity; MSRT = Marketing Strategy Response Timeliness; MTRB = Market Turbulence; TTRB = Technological Turbulence; OPM =Open-mindedness; TFD = Team Functional Heterogeneity

Table 24: Full Measurement Model: Confirmatory Factor Analysis Loadings

	Study1	Study2
Strategic Information Exchange		
We have regular interdepartmental meetings to discuss market trends and developments.	a	.66
Marketing personnel in our business spend time discussing customers' future needs with other functional departments.	a	.78
When something important happens to a major customer or market, the whole business knows about it in a short period.[2]	a	--
Data on customer satisfaction are disseminated at all levels of the organization on a regular basis.	a	.70
When one department finds out something important about competitors, it is quick to alert other departments.[2]	a	--
Major changes in our industry are communicated throughout the organization.	a	.63
Important developments outside our industry are shared across departments.	a	.58
In making strategic marketing decisions, managers in our organization have formal information links established between all parties involved in decisions.	.63	.62
In making strategic marketing decisions, managers in our organization have formal or informal processes for sharing information effectively between departments.	.98	--
In making strategic marketing decisions, managers in our organization have informal networks that ensure decision makers generally have the information they need.	.56	--
In making strategic marketing decisions, managers in our organization employ people who are willing to educate others.	.56	--
In making strategic marketing decisions, managers in our organization take the necessary time to properly train employees in new tasks relating to such decisions.	.61	.75
In making strategic marketing decisions, managers in our organization have formal or informal processes for sharing information effectively within departments.	.92	.65
Organizational Cognitive Complexity		
Competitor Orientation	.77	.72
Customer Orientation	.86	.85
Macroenvironmental Orientation	.75	.51
Product Orientation	.71	.76
Decision-making Complexity Dimension		
Problem Identification and Definition		
considers problems using multiple perspectives.	--	--
positions problems within multiple contexts.	.83	.79
explores problems from differing perspectives.	.90	--
gives due consideration to divergent explanations of problems.	.82	.74
holds multiple viewpoints on possible causes.	--	--
reflects on problems from multiple vantagepoints.	.89	.84
Alternative Development		
formulates a number of potential solutions from many differing perspectives.	--	--
seeks solutions by considering a diverse set of perspectives.	.90	.85
considers a wide variety of solutions.	--	--
relies on diverse information for finding solutions.	.68	.55
discusses novel perspectives in seeking solutions.	.64	.69
gives due consideration to divergent ideas.	.74	--
explores multiple solutions.[1]	--	--

(table continued)

(Table 24 continued)

Solution Selection		
bases solutions on viewpoints from multiple organizational members.	.85	.70
selects solutions using multiple perspectives.	.82	.76
takes differing perspectives into account when deciding on a solution.	.88	--
relies on diverse information for determining solutions.	--	--
views each solution from all angles.	.83	.77
considers multiple viewpoints in deciding on a course of action.	--	--
Marketing Strategy Creativity		
The chosen strategy was very different from others developed in the past.	.63	.70
The strategy included some new aspects compared to previous strategies.	.70	.58
The strategy broke some of the "rules of the game" within the product/market.	.68	.76
The strategy was innovative.	.79	.90
Compared to our previous, similar strategies, at least some parts were daring, risky, or bold.	.74	.70
Marketing Strategy Response Timeliness		
It takes us very little time to answer to competitive pressure with a strategy of our own.	--	.71
We tend to execute a rapid response to changes in our customers' product or service needs.	.74	.78
If a major competitor were to launch an intensive campaign targeted at our customers, we would implement a response immediately.	.63	--
In this organization, strategy implementation could be characterized as "rapid."	.91	.85
We are able to move quickly from the strategy's development to its use or abandonment.	.88	.84
Changes in our industry are soon met with changes in our organization's strategy.	.78	.78
We are able to implement a strategy in a timely fashion.	.81	.78
Our strategic response echoes the rate of change within our industry.	--	--
Perceived Environmental Turbulence		
Market Turbulence		
In our kind of business, customers' product preferences change quite a bit over time.	.79	.60
Our customers tend to look for new products all the time.	.85	.89
We are witnessing demand for our products and services from customers who never bought them before.	.60	.50
New customers tend to have product-related needs that are different from those of our existing customers.	.47	--
We cater to few of the same customers that we used to in the past.	--	--
Technological Turbulence		
The technology in our industry is changing rapidly.	.75	.72
Technological changes provide big opportunities in our industry.	.91	.86
Technological developments in our industry are important.	.73	.82
A large number of new product ideas have been made possible through technological breakthroughs in our industry.	.65	.75
Open-mindedness		
Managers in this organization are open to questioning of their "view of the world."	.59	--
Our business unit places a high value on open-mindedness.	.78	.77
Managers encourage employees to "think outside the box."	.77	.81
An emphasis on constant innovation is part of our corporate culture.	.76	--
Original ideas are highly valued in this organization.	.83	.84
We are not afraid to reflect critically on the shared assumptions we have about the way we do business.	.67	.83

(table continued)

(Table 24 continued)

Team Functional Diversity [b]
Accounting
Finance
Human Resource
Information Technology/Systems
Legal
Marketing/Sales/Customer Service
Operations/Production
Public Relations
Research and Development

[a] Item added for study two.
[b] Team functional diversity is not a reflective measure and was, therefore, not included in confirmatory factor analysis.

APPENDIX E: DESCRIPTIVES OF RESPONDENTS AND ORGANIZATIONS

Table 25: Respondent Profile

Organizational Experience	Study 1	S1%	Study 2	S2%
5 years or less	25	28%	0	0%
6 to 10 years	21	24%	25	12%
11 to 15 years	7	8%	30	15%
16 to 20 years	7	8%	37	18%
More than 20 years	28	32%	112	55%
Total	88	100%	204	100%
Strategic Involvement	Study 1	S1%	Study 2	S2%
To a moderate extent	28	32%	0	0%
To a considerable extent	19	22%	26	13%
To a great extent	17	19%	73	36%
To an extreme extent	24	27%	105	51%
Total	88	100%	204	100%
Position	Study 1	Study 2	S1%	S2%
CEO/President	a	159	--	78%
Vice President	a	33	--	16%
Middle Management	a	12	--	6%
Total	a	204	--	100%

[a] Responses worded differently in study one. There were a total of 87 responses which were distributed as follows: Upper management = 36 (41%); Middle management = 32 (37%); Staff = 10 (11%); Entry = 2 (2%); and Other = 7 (8%)

Table 26: Organizational Profile

Employees	Study1	S1%	Study 2	S2%
1 - 4	4	5%	10	5%
5 - 9	9	10%	18	9%
10 - 19	9	10%	38	19%
20 - 49	16	18%	57	28%
50 - 99	9	10%	37	18%
100 - 249	13	15%	29	14%
250 - 499	5	6%	7	3%
500 - 999	5	6%	4	2%
1,000 - 4,999	10	11%	2	1%
5,000 - 9,999	8	9%	1	0%
Total	88	100%	203	100%

Annual Sales	Study1	S1%	Study 2	S2%
Less than $500,000	13	16%	4	2%
$500,000 - $1 million	10	12%	6	3%
$1 - $2.5 million	9	11%	16	8%
$2.5 - $5 million	11	13%	42	21%
$5 - $10 million	5	6%	32	16%
$10 - $20 million	3	4%	41	20%
$20 - $50 million	7	8%	36	18%
$50 - $100 million	3	4%	16	8%
$100 - $500 million	9	11%	8	4%
$500 million - $1 billion	2	2%	1	0%
Over $1 billion	11	13%	1	0%
Total	83	100%	203	100%

VITA

Stern Neill was graduated with a bachelor of arts degree in journalism and minors in history and business administration from Louisiana State University in 1992. In 1994, he was graduate with a master of business administration degree from Southeastern Louisiana University. He received the degree of Doctor of Philosophy in business administration with a concentration in marketing and a minor in Information Systems and Decision Science from Louisiana State University in 2000. He has worked in the field of marketing as a market researcher for the Neill Corporation since 1992. He holds membership in the Academy of Marketing Science, American Marketing Association, and Institute for Operations Research and the Management Sciences. He is a 1998 American Marketing Association Doctoral Consortium Fellow. Additionally, he has published several refereed conference proceedings and presented conference papers at the American Marketing Association and the Society for Marketing Advances.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Stern Parker Neill

Major Field: Business Administration (Marketing)

Title of Dissertation: Organizational Cognitive Complexity: Determinants and Consequences

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

March 22, 2000