Developing the organization's sensemaking capability: Precursor to an adaptive strategic marketing response

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Abstract

Effective strategic planning demands that organizations develop an understanding of the forces shaping the situation by engaging the collective efforts and interpretive capabilities of various representatives of the organization. This study investigates the mechanisms by which such an understanding develops and, subsequently, shapes marketing strategy. Specifically, organizations are examined as sensemaking units stimulated by perceived environmental turbulence, cultural open-mindedness, and team functional diversity. These factors are modeled as determinants of an organization's sensemaking capability, which is comprised of communicative, interpretive, and analytical dimensions. This study argues that a developed sensemaking capability increases the potential range of strategic responses and, ultimately, enhances customer-based performance. The results from a sample of wholesale distributors suggest that organizations that maintain greater internal variety are better able to sense and respond to the environment.

1. Introduction

The business environment is increasingly complex. This complexity derives in part from exponential increases in organizational information processing capabilities, an increasingly dynamic and global business environment, and increasing amounts of information about both the content and structure of this environment (Satish, 1997). Growing environmental complexity offers organizations both problems and opportunities. As interpretative systems (Daft & Weick, 1984), organizations can become overwhelmed with information. Managers commonly employ simplified "mental models," focus on selected environmental domains, and utilize "rule of thumb" heuristics for decision making; what Simon (1957) terms "bounded rationality." Interdependent action and communication among multiple independent actors, potentially focusing on different environmental domains, further complicates information processing within an organization. This becomes increasingly evident as organizations confront situations marked by ambiguity and complexity, as is frequently the case during marketing strategy formation.

Organizations can either reduce or absorb complexity (Boisot & Child, 1999). Organizations that reduce complexity focus internally and attempt to buffer their internal systems from the distractions of environmental change. Organizations that absorb complexity develop "complex adaptive systems" that seek to integrate and synthesize diverse and potentially conflicting aspects of their environment and consider multiple competing interpretations when formulating response options (Gell-Mann, 1994). By developing more varied images of the environment, such organizations "engage in sensemaking that is more adaptive than … organizations with more limited vocabularies" (Weick, 1995, p. 4). These organizations maintain a *sensemaking capability*, which is a bundle of collective

routines that shape what information is assimilated, how it is interpreted, and which actions are considered (Sackman, 1991; Thomas, Clark, & Gioia, 1993; Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2005).

This paper examines the role of sensemaking on marketing strategy outcomes. Previous efforts to understand sensemaking within this context have been based in organizational learning and market orientation. Studies of organizational learning have examined learning as a process that occurs in response to environmental change and unfolds over time (Baker & Sinkula, 1999; Sinkula, 1994; Sinkula, Baker, & Noordewier, 1997). Learning is an outcome of a cognitive effort that is predicated on learning-oriented organizational values and dependent on marketing information processing behaviors. These processes transform information into knowledge, resulting in modified behaviors that assimilate new knowledge and insights. Menon, Bharadwaj, Akidam, & Edison, 1999 see organizational learning as an outcome of the marketing strategy making process. The firm makes sense of its situation by engaging in marketing strategy making, and it is through these processes and behaviors that learning is evidenced in terms new skills, understandings, and routines. As such, organizational learning is the insight gained through better knowledge and understanding (Fiol & Lyles, 1985). For these authors, organizational values, processes, and decisions facilitate learning as mechanisms for making sense.

Studies of market orientation have examined the ability of a firm to collect and react to environmental information by generating, disseminating, and responding to information about customers and competitors (Jaworski & Kohli, 1993; Kohli & Jaworski, 1990; Narver & Slater, 1990; Slater & Narver, 1995). Day (1994a) synthesizes these studies and argues that market driven organizations have superior market sensing and customer-linking capabilities. He, further, emphasizes that every discussion of a market orientation highlights the ability of a firm to continuously sense and act upon trends and events in the environment. These prior studies have examined discrete sensemaking mechanisms. We attempt to build on these studies by integrating these mechanisms and empirically examining sensemaking and how organizations deal with environmental complexity.

Sensemaking is posited to consist of three dimensions: communicative, interpretative, and analytical. Prior research has examined these dimensions in relative isolation as organizational information processes (e.g., Huber, 1991; Kohli & Jaworski, 1990; Moorman & Slotegraaf, 1999; Sinkula, 1994), strategic orientations (e.g., Day & Nedungadi, 1994; Narver & Slater, 1990; Noble, Sinha, & Kumar, 2002), and decision making processes (e.g., Hutt, Reingen, & Ronchetto, 1988; March, 1994; Menon et al., 1999). Other studies have sought linkages among these sensemaking dimensions and firm performance (Bogner & Barr, 2000; Thomas et al., 1993) but have not examined antecedents to sensemaking. This study seeks to integrate these prior studies and identify the organizational levers and adaptive outcomes of an organization's sensemaking capability. More generally, we aim to confirm the capability–performance relationship while breaking new ground on the organizational dynamics that lead to capability development (Ethiraj, Kale, & Krishnan, 2005). Understanding sensemaking requires an examination of its antecedent factors and use in the deployment of organizational resources towards enhancing performance. This explication permits control of the levers, and thus the outcomes, of sensemaking.

2. Sensemaking: a strategic capability

Sensemaking is the process through which an organization acquires, interprets, and acts on information about its environment (Weick, 1995). Thomas et al., (1993) define sensemaking as "the reciprocal interaction of information seeking, meaning ascription, and action" (p. 240). Similarly, Sackman (1991) refers to sensemaking as a set of mechanisms that define an organization's "standards and rules for perceiving, interpreting, believing, and acting that are typically used" (p. 33). Thus, organizational sensemaking is multidimensional based on the interplay of meaning and action (Weick et al., 2005).

Firms with a developed sensemaking capability are better able to communicate (through strategic information exchange), interpret (by simultaneously assimilating multiple environmental dimensions with increased strategic complexity), and analyze (through multiple perspective consideration) a greater amount and variety of information, leading to a greater range of behaviors with which to respond to the environment. Sensemaking is fostered by perceived market turbulence, an open-minded organizational culture, and team functional diversity. As a capability, it contributes to a firm's ability to build and sustain a competitive advantage (Day, 1994a; Teece, Pisano, & Shuen, 1997) by enhancing the ability to effectively configure and deploy resources to better respond to a changing environment (Eisenhardt & Martin, 2000). The conceptual and operational

Table 1
Dimensions of a sensemaking capability

	Communicative	Interpretive	Analytical
Function	Embeds the group perspective within the mind of the individual manager through the sharing of relevant information	Shapes perceptions of the strategic situation by directing what information is received and how it is interpreted and utilized	Develops meaning of the strategic situation through the mingling of beliefs among decision-makers
Operationalization	Strategic information exchange	Strategic complexity	Multiple perspective consideration
Operational definition	The degree that relevant information is shared among members of the decision making team	The organization's capacity to construe its environment in a multidimensional way	The ability to simultaneously incorporate multiple perspectives during decision making

components of sensemaking capability are summarized in Table 1 while Fig. 1 provides an overview of the constructs and relationships examined in this study.

2.1. Communicative: strategic information exchange

Achieving collective outcomes necessitates that organizations develop collaborative mechanisms that bridge the gap between functional departments and allow for the free-flow of ideas (Dougherty, 1992; Ruekert & Walker, 1987). To reflect the complexity of the environment requires informational exchanges from multiple individuals with diverse knowledge, skills, and values (Hutt et al., 1988). Through interactions and shared experiences, organizational members come to develop an understanding – or interpretation – of their environment. The communication component of sensemaking embeds the group perspective within the mind of the individual manager. Rather than seeing the organization as a collection of individuals, this perspective sees the individual as a reflection of the group (Cook & Yanow, 1993; Douglas, 1986).

Given the inherent challenges in strategy formation and the limited capacity of individual decision makers, the sharing of strategic information is a necessary component of sensemaking. Strategic information exchange is the degree that relevant information is shared among members of a decision making team. Past research has demonstrated that communication enhances effective marketing strategy formulation (Hutt et al., 1988). Communication allows information to be seen in a broader context, specifically by individuals who might use or be influenced by it (Slater & Narver, 1995). Rather than necessitating a single interpretation, communication is a mechanism allowing for organized action despite interpretative differences (Donnellon, Gray, & Bougon, 1986) and is a central component of sensemaking (Weick et al., 2005). Thus, through communication, defined as the exchange of strategic information, organizations make sense of their environment.

2.2. Interpretive: strategic complexity

The notion of cognitive complexity has long been applied to individuals by measuring their ability to differentiate among and to integrate diverse stimuli (Kelly, 1955; Schroder, Driver, & Streufert, 1967). Correspondingly, strategic complexity is the organization's capacity to construe its environment in a

multidimensional way (Streufert & Swezey, 1986). Decision-makers scan their environment and choose strategies based upon their preexisting schema (Hambrick, 1982). Schemas act as information-seeking structures that accept information and guide action (Neisser, 1976). In sensemaking, schemas function to label stimuli in such ways as to suggest possible actions (Weick et al., 2005). At the organizational level, strategic orientations act as schemas by selecting and actively modifying experience — in effect, shaping perceptions of the strategic situation. The particular strategic orientation employed influences which salient environmental aspects the organization believes will lead to a competitive advantage (Day & Nedungadi, 1994).

Several specific environmental domains serve as potential organizing schema. Boulding and colleagues (1994) identified four strategic dimensions as the cognitive framework for strategic decision making: competitor, customer, product, and macroenvironmental. We adopt these dimensions in assessing an organization's strategic orientation. A competitor orientation focuses on current and potential competitors, while a customer orientation emphasizes the interests of target buyers. A product orientation represents an internal focus emphasizing quality and efficiency. A macroenvironmental orientation emphasizes issues and trends outside of the organization's immediate industry. Strategically complex organizations are attuned to and utilize multiple dimensions when interpreting their environment and are capable of differentiating and integrating complex environmental information (Streufert & Swezey, 1986). Thus, strategic complexity is defined as an organization's capacity to construe its environment in a multidimensional manner. Through this cognitive framework, an organization makes sense of the situation by encoding and assigning meaning to environmental cues.

2.3. Analytical: multiple perspective consideration

The strategic decision making process engages multiple participants representing different points-of-view. Deciding on a course of action involves a mingling of beliefs among decision-makers (Frankwick, Ward, Hutt, & Reingen, 1994; Walsh & Fahey, 1986) and is part of sensemaking (Thomas et al., 1993; Weick et al., 2005). Decision making is a way of ascribing meaning (Weick, 1995). It involves not only an analysis of the situation but also the formulation of alternatives and selection
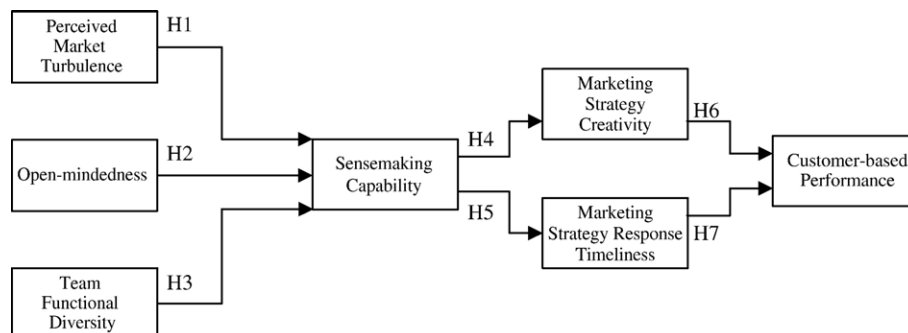

Fig. 1. Determinants and consequences of sensemaking capability.

criteria (Milliken, 1990). In other words, decision making is an effort by organizational members to develop meaning as well as determine choice, which is embedded in sensemaking.

Multiple perspective consideration is defined as the differentiation and integration of multiple perspectives during decision making. These perspectives entail the beliefs of organizational decision makers about the current situation, if action is appropriate, and what the consequences of those actions might be. In exploring multiple perspective consideration, this study considers three phases: identification, development, and selection. Mintzberg and colleagues (1976) have concluded that these phases are not addressed in a discrete, sequential manner, but rather are simultaneous, interrelated events. Organizations engage in complex decision making by simultaneously considering multiple perspectives during engagement in problem definition, alternative development, and solution selection. By cycling within the decision making process, organizations make sense of their environment by maneuvering from little understanding to deeper comprehension.

3. Determinants and consequences

During marketing strategy formation, sensemaking is influenced by the internal perceptions, values and expertise of its members. Efforts at sensemaking influence strategic outcomes and performance. Specifically, the following antecedents lead to the development of a sensemaking capability: perceived market turbulence — a stimulus that acts to trigger collective sensemaking; open-mindedness — an organizational value that facilitates sensemaking; and team functional diversity — differences in expertise, goals, and interpretations that promote sensemaking. Sensemaking, in turn, is modeled as a predictor of marketing strategy creativity and response timeliness. Finally, these strategic outcomes are modeled as predictors of customer-based performance (see Fig. 1).

3.1. Determinants of an organization's sensemaking capability

3.1.1. Perceived market turbulence

The role of decision making becomes increasingly uncertain and demanding as the organization finds that it must compete in a turbulent environment (Achrol & Stern, 1988; Glazer & Weiss, 1993). With increasing turbulence, the need for information processing increases (Tushman & Nadler, 1978), as does the level of information exchange (Daft & Lengel, 1986; Menon & Varadarajan, 1992). Dynamic environments create the need for differentiation and integration of information (Khandwalla, 1973; Miller & Friesen, 1983). Market turbulence gauges the extent that an organization perceives the composition and preferences of its customers as changing over time (Jaworski & Kohli, 1993). Perceptions of market turbulence should discourage mindsets from becoming entrenched, thus preventing rigidity within the organization's sensemaking framework. As such, perceived market turbulence should trigger efforts at sensemaking.

H1. Perceived market turbulence is positively related to an organization's sensemaking capability.

3.1.2. 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). A value closely associated with a learning culture is open-mindedness (Sinkula et al., 1997). Open-mindedness is an organizational value that measures receptivity to new and possibly different ideas. While familiar approaches to problems and their solutions may have proven successful in the past, open-minded cultures are more likely to question long-held practices and beliefs (Sinkula et al., 1997) and encourage the sharing of strategic information among decision-makers (Day, 1994b). Open-mindedness engenders a willingness to question current thinking and practice, to be receptive to emerging possibilities, to share ideas, and to consider differing perspectives. As such, open-mindedness should facilitate sensemaking.

H2. Open-mindedness is positively related to an organization's sensemaking capability.

3.1.3. Team functional diversity

Strategic decision-makers define the organization and interpret the environment (Daft & Weick, 1984). 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. Functionally diverse teams encourage debate and the free flow of ideas (Collins, Hage, & Hull, 1988) and enhance "the breadth of perspective, cognitive resources, and overall problem-solving capacity of the group" (Hambrick, Cho, & Chen, 1996, p. 662). Thus, functional diversity should promote the exchange of relevant information and thus consideration of different "world views" and cognitive styles. Bringing multiple (and possibly competing) individual schema to bear on the strategic situation should promote sensemaking.

H3. Team functional diversity is positively related to an organization's sensemaking capability.

3.2. Consequences of an organization's sensemaking capability

3.2.1. Marketing strategy creativity

Firms that seek to simplify environmental reality tend to converge on a mental model that is commonly accepted within their industry (Huff, 1982). Innovative firms seek to operate "at the edge of what they do not know" (Hill & Levenhagen, 1995, p. 1057). That is, they seek out ill-structured situations that allow them to create new market offerings. Innovation requires broad marketplace consideration (Dickson, 1992) and perspectives derived from multiple "thought worlds" (Dougherty, 1992). Marketing strategy creativity is the extent to which the strategy represents a meaningful difference from existing strategies. Integrating multiple perspectives leads to a more creative response to the environment (Moorman & Miner, 1997; Streufert & Swezey, 1986), while consideration of a broader set

of alternatives encourages deviations from more habitual responses (Andrews & Smith, 1996; Menon et al., 1999). Organizations that engage in comprehensive decision making, moreover, consider more innovative solutions (Bourgeois & Eisenhardt, 1988) and produce more creative strategies (Menon et al., 1999). A developed sensemaking capability should reveal previously unforeseen or unaccepted patterns and trends, encourage the formation of novel ideas, and thus enable a creative response.

H4. An organization's sensemaking capability is positively related to marketing strategy creativity.

3.2.2. Marketing strategy response timeliness

For a system to adapt to its environment, its internal variety must match or exceed that of its environment (Ashby, 1956). Organizations that are able to maintain a broad cognitive framework are capable of forming a more complete understanding (Milliken & Martins, 1996) and possess a greater potential range of behaviors (Fiol & Lyles, 1985; Weick, 1995). Such organizations maintain a broader array of response options with which to match with environmental complexity (Boisot & Child, 1999). In related research, 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. Thus, a sensemaking capability should entail the ability to rapidly understand, incorporate, and process complex, multidimensional information. Marketing strategy response timeliness refers to the readiness with which the organization matches a shift in its environment with a strategic response. Firms utilizing a developed sensemaking capability have a wide spectrum of rapidly accessible strategic responses, which allows for the timely implementation of a response.

H5. An organization's sensemaking capability is positively related to marketing strategy response timeliness.

3.2.3. Customer-based performance

The relationship between responsiveness to market demand and organizational performance is implicit to the strategy literature in general and the marketing concept in particular. A firm that creatively adapts its marketing mix to the changing environment – e.g., by diversifying into a range of product/markets or intensifying its offerings within a specific product/market – is likely to have an advantage over less flexible rivals (Sanchez, 1995). Organizations that "are able to change and adapt faster than other companies" maintain a long-term competitive advantage (Dickson, 1992, p. 71). This advantage is reflected in customer reactions; e.g., customer satisfaction and loyalty (Day & Wensley, 1988). As such, creativity and timeliness are inherently related to the concept of adaptation to market change. Organizations that employ a creative and timely response to environmental changes should attain superior customer outcomes (i.e., satisfaction, value delivery, and loyalty).

H6. Marketing strategy creativity is positively related to customer-based performance.

H7. Marketing strategy response timeliness is positively related to customer-based performance.

4. Method

To empirically test the hypotheses, multi-item scales were used for each of 12 constructs, which are reported in Appendix A. The psychometric properties of the measures were assessed based on data gathered by surveying business executives charged with the formation and implementation of organization-level strategic marketing decisions. 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. Fit statistics and internal consistency coefficients were initially examined to assess the reliability, model fit, and discriminant validity of the measures, followed by a structural model to test the hypothesized relationships.

To assess the validity of the measurement and structural model, a number of indices are recommended to determine the degree to which the specified model reproduces the observed input matrix. Recommendations are that in assessing model fit researchers should use multiple indices of different types. Absolute fit measures are one such type that indicate the degree to which the observed input matrix is predicted by the estimated model. Commonly reported measures are chi-square (χ^2) and root mean square error of approximation (RMSEA). 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 sample sizes (Hair, Black, Rabin, Anderson, & Tatham, 2006). 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 (Hair et al., 2006). For RMSEA, lower values indicate better fit with values less than .10 deemed acceptable (Browne & Cudeck, 1993). To address 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 (e.g., the "null" model of no relationships within the data). For both TLI and CFI, values close to 1 are desirable with values of .90 and above generally viewed as acceptable (Hoyle & Panter, 1995).

4.1. Measures

4.1.1. Determinants

The determinants of an organization's sensemaking capability capture aspects of its beliefs, values, and structure. Market turbulence was measured using a scale developed by Kohli and Jaworski (1990). The open-mindedness construct is from research by Baker and Sinkula (1999). Team functional diversity is a formative measure with each item representing a different functional background. The measure is based on the categories used in a study by Hambrick et al. (1996).

4.1.2. Sensemaking capability

Sensemaking capability is an emergent phenomenon based on the synthesis of communicative, interpretive, and analytical dimensions. Strategic information exchange, which measured the communicative component, was adapted from two existing constructs–information transmission (Moorman, 1995) and intelligence dissemination (Kohli, Jaworski, & Kumar, 1993). The existing measures account for conditions within the organization's immediate market. To ensure a more robust measure, two additional items that captured the degree of information sharing about conditions beyond the organization's immediate industry were included.

Strategic complexity examines the interpretive aspect of sensemaking. It is a multidimensional measure that examines the degree to which the organization's cognitive framework entails competitor, customer, product, and macroenvironmental orientations. Competitor and customer orientation measures are validated scales developed by Narver and Slater (1990). The product and macroenvironmental orientation measures are new. In operationalizing product orientation, this study relied on prior work examining areas of quality (Jacobson & Aaker, 1987; Parasuraman, Zeithaml, & Berry, 1985) and efficiency (Piercy, 1998; Wright, Kroll, Chan, & Hamel, 1991). The development of the macroenvironmental measure was informed by prior research on macroenvironmental knowledge (Andrews & Smith, 1996) by examining the emphasis given to issues and trends outside the firm's immediate environment.

The analytic dimension of sensemaking is operationalized by multiple perspective consideration. Relying on the work of Mintzberg and colleagues (1976), the new measure seeks to capture the incorporation of divergent views within each phase of decision making: problem identification, alternative development, and solution selection.

4.1.3. Consequences

This study examines three outcomes: marketing strategy creativity, marketing strategy response timeliness, and customer-based performance. The marketing strategy creativity measure is based on the work of Menon et al. (1999). The marketing strategy response timeliness measure is a new measure that is related to Kohli and Jaworski's (1990) responsiveness measure. Whereas these authors focused on action taken in response to market intelligence, this study examines the readiness with which the response is implemented.

Due to the unwillingness or inability of respondents to report actual measures of performance, past researchers have advocated the use of multiple measures of organizational performance rather than objective measures (Naman & Slevin, 1993; Siguaw, Simpson, & Baker, 1998). Day and Wensley (1988) argue for a customer-based measure of performance, which they maintain should precede productivity and financial measures. This is in keeping with the marketing concept, which holds that long-term profitability is achieved through the provisioning of superior value to customers (Drucker, 1954; Levitt, 1960). Therefore, this study uses a measure of performance that is assessed based on three items that tap customer-related outcomes. Appendix A contains the items for all of the measures employed in this study.

4.2. Pretest of measurement properties

Four scales were developed for this study: product orientation, macroenvironmental orientation, multiple perspective consideration, and marketing strategy response timeliness. The procedure used in the formation of these scales is consistent with the recommendations of Netemeyer, Bearden, & Sharma (2003). A panel of four expert judges was used to assess the content and face validity of the initial pool of items. As a preliminary assessment of each construct's measurement properties, a survey containing items for each measure was administered to a sample of 88 informants with at least moderate involvement in strategic planning decisions. Analysis began with an examination of each item's distribution. Those items with widely varying distributions were retained for further analysis. Next, each scale's unidimensionality was established by examining the interrelations among items using three techniques: 1) inter-item correlations, 2) exploratory factor analysis, and 3) confirmatory factor analysis. This was followed by an examination of each construct's internal and external consistency. Finally, the fit of the measurement model was assessed. Based on this procedure, some measures were revised after ensuring that face validity would not be compromised.

4.3. Data collection

The sampling frame is drawn from wholesale-distributors. With over $4 trillion in annual sales (U.S. Census Bureau, 2001), the wholesale industry was confronting significant changes at the time of data collection. These changes were brought on by shifts in information technology and industry structure (Distribution Research and Education Foundation, 1998). Three industry groups within wholesale trade were selected in order to represent a range of product types of varying technical complexity and end-usage. The industry groups were Beauty and Barber Supply Institute (BBSI), Independent Medical Distributors Association (IMDA), and National Association of Electrical Distributors (NAED) representing a total of 1055 domestic distributors (BBSI=337, IMDA=99, and NAED=619). While sensemaking is not unique to wholesale trade, its large and dynamic nature provides a suitable test for the theory, and thus provides an appropriate sampling frame for this study.

The data were collected using a key informant design. The survey was distributed to executives at 1055 wholesale-distribution firms with 261 surveys returned. When completing the questionnaire, each respondent was instructed to focus on the organization or business unit as a whole and not just his or her own involvement. The respondent was also informed that the questionnaire focused on strategic marketing decisions, such as venturing into a new market, product, or service area; a price adjustment; a market expansion/penetration effort; a new advertising campaign; or some other marketing decision that required a significant resource commitment.
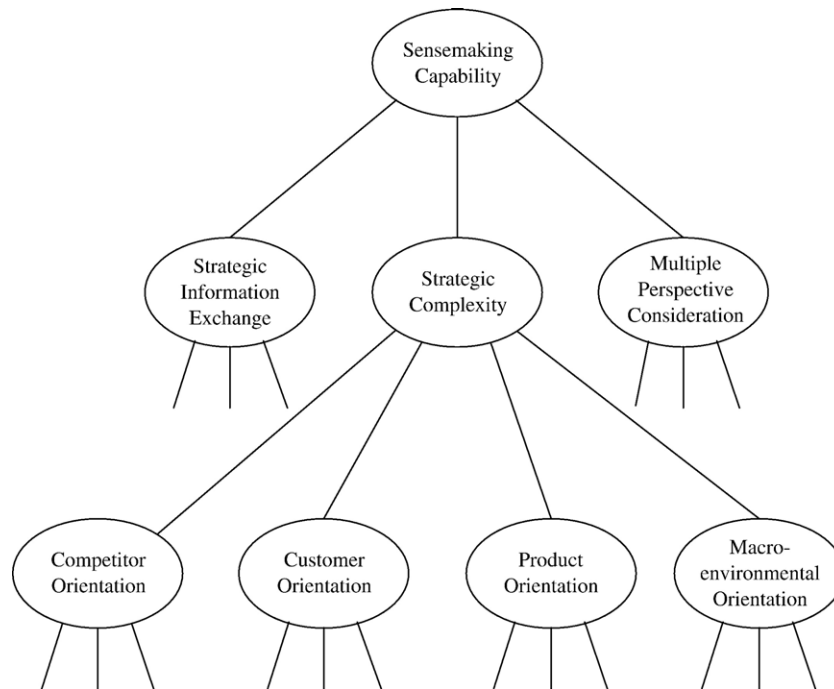
Fig. 2. The dimensions of strategic complexity and sensemaking capability.

To test for non-response bias, mean differences among dependent variables were examined between those who responded within the first 4 weeks ($N=142$) and later returns ($N=119$). No differences were found between early and late respondents on any of the dependent variables: sensemaking capability ($F_{1,200}=.838$, $p=.361$); marketing strategy creativity ($F_{1,201}=.058$, $p=.809$); marketing strategy response timeliness ($F_{1,202}=1.102$, $p=.295$); and customer-based performance ($F_{1,201}=.572$, $p=.451$). Therefore, nonresponse bias was determined not to be an issue (cf., Armstrong and Overton, 1977).

While relying on single individuals may introduce perceptual bias (Phillips, 1981), research has demonstrated consistent results when analyzing a single informant versus aggregating group perceptions (Atuahene-Gima & Murray, 2004; Miller, Burke, & Glick, 1998). Consistent with procedures employed by Menon and colleagues (1999) and Day and Nedungadi (1994), informants were carefully selected based on three measures: extent of strategic decision making involvement, level of organizational responsibility, and degree of organizational knowledge. 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). Second, qualified informants had to have substantial organizational responsibilities and, therefore, were required to hold at least a division manager position to remain in the study. The final criterion was that informants had to be knowledgeable about the organization and its strategic issues. Thus, only respondents with more than 5 years of experience with the target organization were included for further analysis. Based on these criteria, 57 respondents were removed from the study, thus yielding a usable response rate of 19.3%. Given

that past research using top managers as key informants generally attains response rates of 15–20% (Menon et al., 1996), the level of response was considered acceptable. The remaining 204 responses were used to confirm the reliability and validity of the measures and estimate the structural model.

5. Results

Structural equation modeling was used to test the proposed model. This technique allows for the simultaneous examination of a series of interrelated dependence relationships. To control for error in measurement, the measurement aspect is fixed prior to estimating the relationships in the structural model. This method avoids the interaction of measurement and structural models. Following this procedure, the internal and external consistency of the latent constructs is examined.

Table 2
Reliability and descriptive statistics: strategic complexity and sensemaking capability

	Composite reliability	AVE	Mean (S.D.)
Strategic complexity			
Competitor orientation	.72	.47	5.43 (0.99)
Customer orientation	.83	.50	5.66 (0.82)
Product orientation	.76	.52	5.74 (0.87)
Macroenvironmental orientation	.86	.56	4.14 (1.15)
Sensemaking capability			
Strategic information exchange	.87	.45	4.72 (1.14)
Strategic complexity	.81	.52	5.24 (0.75)
Multiple perspective consideration	.92	.56	5.24 (0.94)

Each construct is assessed for reliability and validity. The path estimates are used to test the hypotheses.

5.1. Modeling sensemaking capability

The strategic complexity and sensemaking capability measures are comprised of four and three dimensions, respectively. To assess their measurement properties, two one-factor models were evaluated using LISREL VIII with covariance matrices as input. Prior to testing the validity of the sensemaking capability construct, the strategic complexity dimensions were examined. This is because the strategic complexity measure is nested within the sensemaking capability construct. Recall from Table 1 that an organization's sensemaking capability is comprised of strategic information exchange, strategic complexity, and multiple perspective consideration. These three measures are illustrated in Fig. 2.

The results indicate that the estimated measurement models adequately represent the observed input matrices for the strategic complexity ($\chi^2 = 219.19$ with $98 \, df$, $p < .01$; RMSEA = .08; TFI = .90; CFI = .92) and sensemaking capability ($\chi^2 = 366.44$ with $186 \, df$, $p < .01$; RMSEA = .07; TFI = .91; CFI = .92). Additionally, each item has a significant loadings with its intended factor. The reliability and descriptive statistics measures are reported in Table 2. The composite reliability estimates range from .72 to .92. As further evidence of the internal consistency, all measures achieve an average variance extracted (AVE) estimate of .45 or higher, which is an indicator of the amount of variance captured relative to measurement error.

5.2. Measurement model results

To assess measurement unidimensionality, all constructs were modeled as first-order factors using the covariance matrix as input. The results of the measurement model indicate that the estimated model adequately represents the observed input matrix. The fit statistics, internal consistency measures, and descriptive statistics of the measurement model are reported in Table 3 along with the correlations among the latent constructs. The fit of the model is acceptable. As evidence of each measures' internal consistency, the composite reliability estimates range from .72 to .91 and each measure achieved an AVE estimate of .47 or higher. Discriminant validity was supported in all cases by confirming that the square of the parameter estimate between any two constructs was less than the average AVE between the same two constructs (Fornell & Larcker, 1981). In other words, each measure accounts for more variation within the construct than is explained between constructs.

5.3. Structural model results

To assess the structural model, three criteria were used: (1) the fit indices, (2) the significance of the path estimates, and (3) the amount of variance explained in each of the endogenous constructs. The correlation matrix, based on a summed scale of the indicators, was used as input. To control for measurement

Table 3
Measurement model results: full model

Fit statistics

χ^2	df	RMSEA	TLI	CFI
373.57	237	.05	.94	.95

Internal consistency and descriptive statistics

	Composite Reliability	AVE	Mean (S.D.)
Sensemaking capability	.82	.60	5.05 (0.79)
Marketing strategy creativity	.85	.54	4.85 (1.04)
Marketing strategy response timeliness	.91	.63	5.18 (1.09)
Customer-based performance	.80	.59	5.58 (0.80)
Perceived market turbulence	.72	.47	4.76 (1.17)
Open-mindedness	.89	.66	5.83 (0.93)
Team functional diversity	*	*	1.48 (0.45)

Correlations among latent constructs

	1	2	3	4	5	6	7
(1) Sensemaking capability	1.00						
(2) Marketing strategy creativity	0.55	1.00					
(3) Marketing strategy response timeliness	0.62	0.52	1.00				
(4) Customer-based performance	0.40	0.30	0.37	1.00			
(5) Perceived market turbulence	0.32	0.28	0.26	0.10	1.00		
(6) Open-mindedness	0.61	0.44	0.54	0.29	0.18	1.00	
(7) Team functional diversity	0.21	0.13	0.08	0.13	0.22	0.03	1.00

df = degrees of freedom; RMSEA = root mean square error of approximation; TLI = Tucker–Lewis index; CFI = comparative fit index.
  * Formative measure.

error, the parameters of the constructs were fixed prior to estimation. This was done by setting each loading estimate (i.e., lambda relationship) as the square root of its reliability, and its error term set to one minus the reliability (Hair et al., 2006).

The structural model results are presented in Table 4. The overall fit of the structural model was adequate. All paths are statistically significant ($p < .05$ or better) and account for close to half or more of the variance in sensemaking capability, marketing strategy creativity, and marketing strategy response timeliness. More than 20% of the variation in customer-based performance is accounted for by marketing strategy creativity and response timeliness.

5.4. Hypothesis tests

Seven path coefficients were estimated. To provide empirical support for the study's hypotheses, the direction and statistical significance of each is examined. As Table 4 indicates, all paths are statistically significant ($p < .05$ or better). H_1 predicted that market turbulence is positively related to an organization's sensemaking capability and is supported ($\gamma_{11} = .24$, t-value = 3.42). H_2, which posited that open-mindedness was

Table 4
Structural model results

Fit statistics

χ^2	df	RMSEA	TLI	CFI
18.72	11	.06	.96	.98

Explained Variance in Endogenous Constructs

Endogenous construct	Explained variance
Sensemaking capability	.64
Marketing strategy creativity	.48
Marketing strategy response timeliness	.57
Customer-based performance	.22

Completely standardized path estimates

Path	Estimate	
H_1: Perceived market turbulence→sensemaking capability	.24	(3.42)
H_2: Open-mindedness→sensemaking capability	.68	(10.92)
H_3: Team functional diversity→sensemaking capability	.13	(2.24)
H_4: Sensemaking capability→marketing strategy creativity	.69	(10.12)
H_5: Sensemaking capability→marketing strategy response timeliness	.75	(12.22)
H_6: Marketing strategy creativity→customer-based performance	.18	(1.93)
H_7: Marketing strategy response timeliness→customer-based performance	.35	(3.75)

T-values (in parentheses) of 1.65 or greater are significant at the .05 level; t-values of 2.33 or greater are significant at the .01 level.

positively related to a sensemaking capability was supported ($\gamma_{13}=.67$, t-value$=10.92$); it had the strongest effect among all of the exogenous variables. H_3 was also supported. Team functional diversity was positively related to a sensemaking capability ($\gamma_{14}=.13$, t-value$=2.24$).

Among the model's endogenous relationships, H_4 and H_5 theorize that a sensemaking capability aids in the implementation of creative and timely marketing strategies. The results indicate that a sensemaking capability is positively related to both marketing strategy creativity ($\beta_{21}=.70$, t-value$=10.12$) and response timeliness ($\beta_{31}=.76$, t-value$=12.22$). H_6 and H_7, respectively, predict that marketing strategy creativity and response timeliness enhance performance. Both of these relationships were supported. Marketing strategy creativity ($\beta_{42}=.18$, t-value$=1.93$) and responsive timeliness ($\beta_{43}=.35$, t-value$=3.75$) were positively related to customer-based performance.

6. Discussion

By developing a sensemaking capability, an organization is better able to understand the diverse and often conflicting aspects of the environment that affect it and to construct an adaptive response. Implementing effective strategies requires organizations to develop sensemaking capabilities that allow them to attend to multiple factors. In order to maintain such a multidimensional focus, organizations must design themselves in ways that facilitate the flow of diverse ideas, remain receptive to the insights of other perspectives, and attune to the elements of a fluctuating environment. Perception of a changing market, open-mindedness, and multifunctional representation lead to the

emergence of an organization's sensemaking capability where a variety of viewpoints are integrated and synthesized.

Previous examinations of sensemaking have sought to argue its existence within organizations (Anand & Peterson, 2000; Bogner & Barr, 2000; Gioia & Thomas, 1996) with limited empirical evidence confirming its relationship with organizational performance (Thomas et al., 1993). Only recently have researchers begun to examine the role of sensemaking in new product (Akgun, Lynn, & Yilmaz, 2006) and interfirm outcomes (Johnson, Sohi, & Grewal, 2004). Beyond these few exceptions, research has focused on sensemaking in organizations rather than organizational sensemaking. Perhaps while sensemaking is a compelling concept, researchers have been challenged with operationalizing the construct in order to subject it to a rigorous analysis. This study extends current theory by conceptualizing and examining sensemaking as an organizational capability; defining, conceptualizing, and empirically operationalizing its dimensions; and imbedding this construct in a preliminary nomonological network of antecedents and consequences.

Sensemaking provides an important means of assessing how an organization deals with complexity. As Nicolini and Meznar (1995) note, the social construction of knowledge is a potentially powerful managerial tool. It is through negotiated social construction activities (Gioia & Chittipeddi, 1991) that the understanding of the group emerges and informs the thinking of the individual thus providing a framework for strategic change. If management narrows the scope of strategic inquiry, it stunts the development of a rich understanding of the environment. On the other hand, if management develops an open and questioning culture it can broaden the scope of inquiry, encouraging the absorption and understanding of environmental complexity. As Trice and Beyer (1993) note, managers who want to affect organizational culture can influence two dimensions of the cultural environment: the objective conditions of the work environment, and "how members and other stakeholders of their organizations perceive their environments" (Trice & Beyer, 1993, p. 368). Sensemaking provides a direct means of assessing the latter, how an organization perceives its environment; and its antecedents, which are initially examined here, provides a means of evaluating the former (i.e., the objective conditions in the workplace that contribute to sensemaking).

As an organization becomes increasingly attuned to environmental changes, perceived uncertainty increases. With perceived uncertainty, the need for information processing is heightened, particularly when dealing with complex, strategic issues. An awareness of change stimulates interaction between managers and the development of a more sophisticated interpretive framework with which to understand and act upon the environment. Consistent with prior research (e.g., Davis, Morris, & Allen, 1991), where perceptions of change are viewed as an antecedent to organizational behavior, the findings of this study support a relationship between perceived market turbulence and an organization's sensemaking capability.

An open-minded culture appears to be the key driver of an organization's sensemaking capability. Open-mindedness helps to break down functional silos and formulaic thinking, fostering

an environment in which individuals share thoughts and ideas. This allows for the development of a broader understanding by which to transcend interpretive differences. Open-minded cultures will also question how business is conducted, which translates into a decision environment in which there is no single definition and solution for every strategic situation. This loose coupling of ideas provides an essential ingredient in the development of a sensemaking capability.

The results also suggest that team functional diversity impacts an organization's sensemaking capability. Due to their complex nature, strategic situations are often beyond the individual's information processing capacity. Teams with multiple specialties increase exposure to different experience and knowledge, allowing for the formation of a more complete and accurate representation of the environment (Sutcliffe, 1994). As more functional specialties are represented, decision makers communicate and debate ideas that trigger efforts at sensemaking.

This research demonstrates that three dimensions represent a sensemaking capability: strategic information exchange, strategic complexity, and multiple perspective consideration. This capability serves as a fundamental driver of strategic change (i.e., a creative and timely marketing strategy) by breaking down path-dependent cognition (Tripsas & Gavetti, 2000) that might constrain customer-based outcomes. For complex situations, organizations with a developed sensemaking capability appear more responsive to the marketplace. These findings respond in part to Walsh's (1995) call for research establishing a relationship between firm cognition and behavior. As demonstrated here, sensemaking is a capability by which organizations generate the creative and timely marketing strategies that are associated with enhanced customer-based performance.

6.1. Implications for practitioners

While there are many examples of firms that were slow to change or unable to adapt to market forces (e.g., Sony's response to the iPod, IBM's entry into services, Encyclopedia Britannica adoption of digital media, etc.), it is rare to have the veil lifted and understand how sensemaking occurs within organizations. There are notable exceptions where researchers are able to study specific firms and investigate interpretive processes at work and their effect on strategy. For example, Intel (1980s) employed competing interpretations in making the decision to shift from memory chip to microprocessor production (Burgelman, 1991). Another example demonstrates how the entrenched, technology-driven mindsets of Polaroid Corporation executives delayed the development of key capabilities when confronted with significant environmental change; i.e., Polaroid was unable to adapt to the changing competitive landscape in digital imaging (Tripsas & Gavetti, 2000). (Barr (1998)) examines the efforts of managers in the pharmaceutical industry to make sense of environmental change by relating external events to strategic dimensions. The results of this study provide managers with direction as to the specific mechanisms that promote sensemaking and its relationship with an adaptive strategic marketing response.

For managers, the results emphasize that a culture of openness, where ideas and perspectives can be liberally shared

and evaluated, enables key decision makers to develop a rich perspective of the firm's environment. In short, decision makers must boldly question the firm's dominant logic. By fostering a culture of open-mindeness, top management can stimulate debate, facilitate communication, and encourage competing perspectives and interpretations. Perceived environmental turbulence and the diversity of top management team members also influence an organization's sensemaking capability. For practitioners, this means that a superior sensemaking capability comes from a multi-functional understanding that does not assume a steady market environment, but rather is aware of and appreciates change.

The results also strongly suggest that the ability of top management to develop a rich and multi-faceted conceptualization of the environment is directly linked to innovative and timely strategic action. As Ford and Baucus (1987) note, "… decision makers' involvement in, socialization in, and commitment to current strategies, structures, and cultures is important to [organizational] adaptation" (p. 374). Simplicity and especially reductionist thinking is not a virtue. Closing off organizational dialogue from diverse perspectives is shown here to reduce performance. Admittedly, there is a human need to simplify reality in order to understand it. Top managers confronted with a relentlessly expanding stream of information, may be tempted to narrow their focus and short-circuit sensemaking. Limiting top management's dialogue and focus, however, clearly comes at a high price.

The results of this study support the idea that an integrative, comprehensive top management dialogue – as encompassed in the idea of a sensemaking capability – is basic to, and forms a basis for, the firm's ability to adapt. The results suggest that effective marketing strategy centers on developing a dialogue and broader understanding of the environment. This dialogue, furthermore, must be ongoing in order to be effective. In strategy, the environment moves, and the top management team's understanding must move with it.

Creating an environment closed to inquiry can engender a top-management induced worldview that is both oversimplified and fragmented. Decision makers can become too comfortable with the status quo and fail to perceive environmental change. Such organizations may tend to employ reactive strategies. An overly simplified worldview may result in marketing strategies that fail to match the complexity of the situation. Another danger in narrowing the top management dialogue is that it may lead to the fragmentation of organizational knowledge. This suggests that, from an organizational learning perspective, individuals will know significantly more than the organization as a whole. Further, because this information is not shared, various key actors are likely to move in different directions. Failures of coordination may act to delay strategic response to market changes and inhibit the range of possible actions with which to effectively respond to the environment.

6.2. Limitations and opportunities for future research

Investigating the factors that promote sensemaking is critical to strategy research. This study takes a structural perspective by

examining the organization's internal variety, the factors that may serve to create it, and its strategically relevant outcomes. The study has a number of limitations, including the use of cross-sectional data drawn from a single industry. While this industry was undergoing significant change, these firms operate in a unique information environment with possibly distinct sensemaking demands. Additionally, reliance on cross-sectional data warrants caution in interpreting the results, as there is an implicit sequential order to the development and use of constructs (as illustrated in Fig. 1). There may be a number of causal loops among the factors. For instance, sensemaking may impact future perceptions of market turbulence. A longitudinal study could further clarify the causal order between context, sensemaking, action, and outcomes. Further research employing multiple methods and different industries could further probe and explain these effects.

While this study has sought to model the drivers and outcomes of sensemaking, other vital capabilities are at work. Researchers have identified several key capabilities that relate to the design and delivery of superior customer value, (e.g., Day, 1994a; Jayachandran, Hewett, & Kaufman, 2004; Slotegraaff & Dickson, 2004; Vorhies & Morgan, 2003); and yet, this line of inquiry has only begun to uncover the interactions among capabilities (Ethiraj et al., 2005; Moorman & Slotegraaf, 1999; Song, Droge, Hanvanich, & Calantone, 2005). While research is uncovering the critical role of capabilities on firm performance (Desarbo, Di Benedetto, Song, & Sinha, 2005), evidence on the enabling mechanisms that drive the development of superior value-producing capabilities is limited to a few studies (Jayachandran et al., 2004; Morgan, Zou, Vorhies, & Katsikeas, 2003) that thus far have examined the role of knowledge processes. A research agenda is needed which explores the organizational levers to and additive (or trade-off) effects of capabilities.

The literature on information processes, organizational learning, and market orientation also suggests a variety of contextual factors, strategic processes, and organizational outcomes that could be productively examined within a sensemaking capability framework. Specifically, how do specific search strategies, forms of memory, and decision support systems impact an organization's sensemaking capability? Research examining political aspects of sensemaking may also be helpful, e.g., the impact of perceptual agreement and disagreement or conflict among organizational decision makers. The central premise of this study has been that an organization's sensemaking capability enhances its ability to engage in adaptive behavior and achieve superior performance. However, there may be instances where the firm is better served by doing nothing. An argument could be made that sensemaking applies in more dynamic situations where the generation of choice alternatives is necessary. Future studies might also examine an organization's ability to shift from complex to simpler sensemaking in response to situational demands.

Finally, more needs to be known about creating the type of open-minded climate that promotes a sensemaking capability development. This suggests the need to research the determinants of organizational open-mindedness as a cultural type or value system. Such research poses its own problems, of course, since culture is an inherently difficult research topic (Trice & Beyer, 1993), but the results presented here suggest that the effort may be worthwhile.

7. Conclusion

Managers should concern themselves with the organization's ability to make sense of the environment and apply an adaptive response. An open and diverse dialogue that recognizes changing customer preferences enables the sensemaking necessary to execute an adaptive response, thus enhancing customer-based outcomes. While having uncovered forces that allow for creative and timely strategic response, the challenge is in the configuration of those mechanisms that influence the organization's sensemaking capability. Functionally diverse teams that acknowledge market flux and engage in open-minded inquiry are better able to understand and act upon the environment. By failing to appreciate market change, becoming too comfortable with the status quo, and locking into functional silos, the organization will engender a view of the world that is both simple and fragmented. Such an overly simplified worldview may result in marketing strategies that fail to encompass and respond to the complexity inherent in the environment.

Appendix. Study measures

Determinants

Market turbulence[3]

In our kind of business, customers' product preferences change quite a bit over time. Our customers tend to look for new products all the time. We are witnessing demand for our products and services from customers who never bought them before.

Open-mindedness[3]

Our business unit places a high value on open-mindedness. Managers encourage employees to think outside the box. Original ideas are highly valued in this organization. We are not afraid to reflect critically on the shared assumptions we have about the way we do business.

Team functional diversity[4]

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

Sensemaking Capability

Strategic information exchange[3]

We have regular interdepartmental meetings to discuss market trends and developments. Marketing personnel in our business spend time discussing customers' future needs with other functional departments. Data on customer satisfaction are disseminated at all levels of the organization on a regular basis. Major changes in our industry are communicated throughout

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[3] Seven point agree–disagree scale.
[4] An entropy-based index derived from Teachman (1980), $-\Sigma P_t(\ln P_t)$.

the organization. Important developments outside our industry are shared across departments. In making strategic marketing decisions, managers in our organization have formal information links established between all parties involved in decisions. In making strategic marketing decisions, managers in our organization take the necessary time to properly train employees in new tasks relating to such decisions. In making strategic marketing decisions, managers in our organization have formal or informal processes for sharing information effectively *within* departments.

Strategic complexity

Competitor orientation[3]

We rapidly respond to competitive actions that threaten us. Our salespeople regularly share information within our business concerning competitors' strategies. Top management regularly discusses competitors' strengths and strategies.

Customer Orientation[3]

We constantly monitor our level of commitment to serving customer's needs. Our strategy for competitive advantage is based on our understanding of customers' needs. Our business strategies are driven by our beliefs about how we can create greater value for customers. We give close attention to after-sales service. Our business objectives are driven primarily by customer satisfaction.

Product orientation[3]

We are always seeking ways to improve the delivery of our services. Our organization is constantly seeking process improvements. Our business objectives are driven towards producing the highest quality services.

Macroenvironmental orientation[3]

In determining our strategic direction, we search for trends emerging outside our industry. Our strategy includes converting trends outside our industry into business opportunities. We detect changes in the outside environment before most other firms. Our organizational objectives are directly influenced by trends outside our industry. We pay close attention to conditions outside of our industry.

Multiple perspective consideration[3]

In developing marketing strategy, our organization …

Problem identification and definition

…positions problems within multiple contexts. …gives due consideration to divergent explanations of problems. …reflects on problems from multiple vantage points.

Alternative development

…seeks solutions by considering a diverse set of perspectives. …relies on diverse information for finding solutions. …discusses novel perspectives in seeking solutions.

Solution selection

…bases solutions on viewpoints from multiple organizational members. …selects solutions using multiple perspectives. …views each solution from all angles.

Consequences

Marketing strategy creativity[3]

The chosen strategy was very different from others developed in the past. The strategy included some new aspects compared to previous strategies. The strategy broke some of the rules of the game within the product/market. The strategy was innovative. Compared to our previous, similar strategies, at least some parts were daring, risky, or bold.

Marketing strategy response timeliness[3]

It takes us very little time to answer to competitive pressure with a strategy of our own. We tend to execute a rapid response to changes in our customers' product or service needs. In this organization, strategy implementation could be characterized as rapid. We are able to move quickly from the strategy's development to its use or abandonment. Changes in our industry are soon met with changes in our organization's strategy. We are able to implement a strategy in a timely fashion.

Customer-based performance[5]

Customer satisfaction. Delivering customer value. Customer loyalty.

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[5] Seven point scale relative to other firms in industry.

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