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# How Stakeholder Sensing and Anticipations Shape the Firm's Strategic Response Capability

## Abstract

We outline a strategic response capability framework drawing on cognitive neuroscience to explain stakeholder sensing and anticipations as essential input to environmental analysis. Stakeholders receive stimuli from ongoing interactions with the firm and thereby sense current environmental changes and form anticipations about future performance that provide early signals about needs for proactive strategic responses. Based on insights from literatures on cognitive neuroscience, marketing and strategy we develop a strategic response capability model driven by stakeholder sensing and anticipations with associated propositions. We discuss the implications of the proposed framework and suggest future research venues to further uncover the microfoundations of the firm's strategic response capability.

**Keywords:** Anticipations, Cognition, Neuroscience, Sensing, Strategic Responsive Capability.

## Introduction and background

The ability to respond fast and effectively is an essential competitive advantage under turbulent environmental conditions referred to as the firm's strategic response capability. It is perceived as the stimulus-response paradigm applied in biology where an organism's ability to respond to environmental stimuli determines its fitness for survival (Bettis and Hitt, 1995; Day, 1994).

A firm's strategic response capability incorporates three sequential sets of activities: (1) Sensing changes in the environment and anticipating their potential effects, (2) conceptualizing possible responses to the changes by reconfiguring available resources, and (3) executing the chosen response(s) by restructuring the organization (Bettis and Hitt, 1995: 16). Some organizations seek more varied images of the changing environment and thereby "engage in sensemaking that is more adaptive than organizations with more limited vocabularies" (Weick, 1995, p. 4). Sensemaking is a reciprocal interaction process whereby an organization acquires information about the environment from stakeholders, interprets it, and considers possible responsive actions (Thomas, Clark and Gioia, 1993; Weick, 1995). That is, sensemaking is comprised by the firm's anticipatory processing activities (sensing and anticipation processing) and its conceptualization of possible responses to the changes generated from the anticipatory information.

Strategy scholars have shown increasing interest in the cognitive influences on strategic decisions and firm responses (Barr, Stimpert and Huff, 1992; Bettis and Prahalad, 1995; Gavetti, 2005; Hodgkinson and Healey, 2011; Thomas et al., 1993; Tripsas and Gavetti, 2000). Yet, strategic management research has so far been based upon a 'cold' cognition logic that downplays the importance of (social) cognitive neuroscience in strategic adaptation processes (Hodgkinson and Healey, 2011). However, more attention has been dedicated to different aspects of the cognitive neuroscience microfoundations in managerial decisions (Adner and Helfat, 2003), cognition in complex systems (Gavetti, 2005) and psychological foundations of dynamic capabilities (Hodgkinson and Healey, 2011). Stakeholder sensing is an important precursor for firm responses as a way to notice, interpret and process environmental stimuli (Kiesler and Sproull, 1982) to identify emerging threats and opportunities (Teece, 2007). Anticipations of environmental changes promote faster human responses (Simó, Krisky and Sweeney, 2005) where individual behaviors are oriented towards the future with a sense of urgency (Riegler, 2001).

Despite the surging interest in the antecedents to the firm's strategic response capability, the cognitive neuroscience underpinnings of stakeholder anticipatory processing have received little attention. There is a notable lack of work seeking to understand the link between aggregated cognition-action processes, such as, stakeholder anticipations with respect to environmental scanning, collective interpretation, associated organizational responses and firm performance. However, the role of sensing and anticipations for building competitive advantage is considerable as these cognitive processes are unique and idiosyncratic to each organization as the foundations for the firm's ability to respond fast and effectively.

This conceptual article builds on cognitive neuroscience to better understand the mechanisms of stakeholder anticipatory processing and draws on contributions from the marketing and strategy literatures to explore the role of stakeholders as essential elements of the firm's strategic response capability. The article responds to three basic research questions: (1) How do the cognitive neuroscience processes of stakeholder anticipatory processing inform the firm's strategic response capability comprised by scanning, interpretation, and solution generation? (2) How can stakeholder sensing and anticipations advance early warnings into the

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firm's strategic response capability? (3) How can stakeholder anticipatory processing interact with strategy-making to make the firm's strategic response capability more effective?

Stakeholder theory plays a notable role in the strategy-performance discussion and explains why stakeholders are central to firm responsiveness (i.e., de Luque et al., 2008; Harrison, Bosse and Phillips, 2010; Harrison and Freeman, 1999). In short, the firm's primary stakeholders constitute an important source of essential environmental information. Stakeholder sensing and anticipations form a collective mindset about the firm's operational performance from countless experiences, insights, rumors, hunches, suspicions and scattered bits of information about organizational encounters that constitute early signals about future organizational performance that can be used to advance the firm's strategic response capability.

The paper makes an important contribution to the conceptual microfoundational development of firm's strategic response capability by explaining how stakeholder sensing and anticipations constitute essential cognitive foundations for achieving faster and more effective responses. We outline a theoretical framework for the sensing and anticipatory processing as proactive precursors for responsive actions and strategic adaptation. We develop propositions on the relationships between sensing-anticipatory behaviors, responsive actions, and firm performance.

### **Strategic response capability**

The importance of a firm's strategic response capability lies in its ability to adapt business activities to ongoing environmental changes and thereby sustain competitive advantage for superior profitability (Bettis and Hitt, 1995; Day, 1994; Teece, 2007). The firm's strategic response capability, defined as a generalized ability to respond fast when change or surprise occurs, has received increasing attention in the strategic management literature (Eisenhardt, 1989; Kiesler and Sproull, 1982; Bettis and Hitt, 1995; Teece, 1997, 2007).

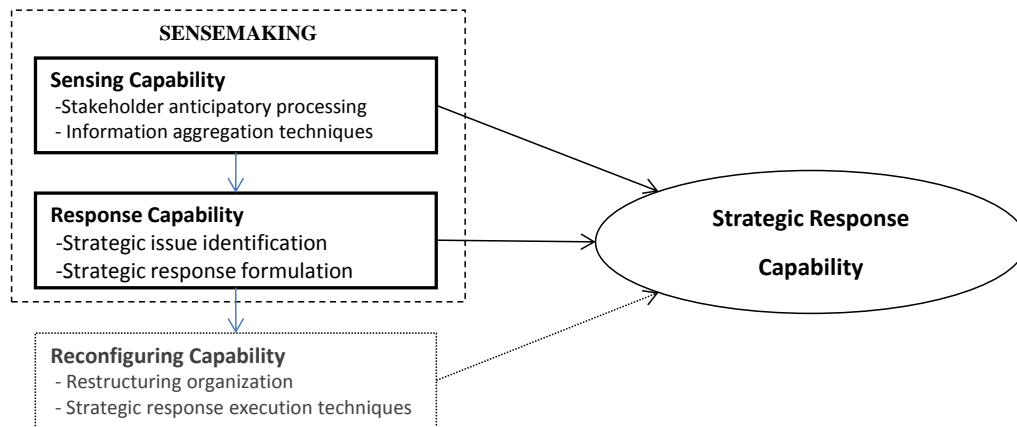
An intention to improve the strategic response capability, or equivalently shift the strategic response curve upward, can be accomplished with skills and competences to shorten the firm's innovation cycle times. Accordingly, the firm's strategic responsiveness has been specified as a "bundle of capabilities to assess the environment, identify firm resources, and mobilize them in effective responsive actions (achieving strategic fit over time)" (Andersen, Denrell and Bettis, 2007: 411). Hence, firm responses are driven by their dynamic capabilities (Collis, 1994; Eisenhardt and Martin, 2000; Rindova and Kotha, 2001; Teece Pisano, and Shuen, 1997; Zollo and Winter, 2002) as an ability to build and reconfigure internal and external competences to address the rapidly changing environment (Collis, 1994). In line with Bettis and Hitt's (1995) definition of the firm's strategic response capability, Teece (2007: 1321) identifies dynamic capabilities as difficult-to-replicate enterprise capabilities required to adapt the firm in view of changing customer and technological opportunities. These capabilities are embedded in processes and routines used to adapt the firm to the changing environment (Eisenhardt and Martin, 2000; Zollo and Winter, 2002).

Sensing and firm responsiveness to market and competitive uncertainties are commonly considered in the marketing literature as the critical capabilities of market-driven firms and organizations are often analyzed as sensemaking units (Neill, McKee and Rose, 2006). A firm's sensemaking capability is related to learning from stakeholders, such as, customers, competitors, and organizational members to continuously sense, anticipate and act on events and trends in present and future markets (Day, 1994; Heinrichs and Lim, 2008; Neill, McKee and Rose, 2007). Sensemaking is the process through which an organization acquires, interprets, and acts on information about its environment (Weick, 1995). Firms that use sensemaking activities and implement information management technologies incorporating processes for gathering, interpreting, and using market information, are considerably more systematic, considerate, and anticipatory than other firms (Heinrichs and Lim, 2008). These firms easily outperform the more ad-hoc, reactive, constrained and diffused efforts of internally focused competitors (Day, 1994).

The previous review is summarized in a theoretical model (Figure 1) that outlines how sensing and anticipations shape the firm's strategic response capability through three sets of sequential activities. We argue that aggregating the sensing and anticipations of important stakeholders will generate useful insights to give early warning signals and develop innovative responses that together with organizational reconfiguration constitute the firm's strategic response capability. The framework synthesizes research streams on strategic responsiveness, organizational sensemaking and the market-driven firm incorporating key concepts from previous studies (Bettis and Hitt, 1995; Neill et al., 2007; Teece, 2007; Thomas et al.,

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1993; Weick, 1995). The framework consists of three primary capability constructs: Sensing capability, response capability and reconfiguration capability that together make up the firm's strategic response capability (Bettis and Hitt, 1995). In this paper, we focus on the sensemaking activities, the firm's sensing capability and response capability, to explain how stakeholder anticipatory processing of the current environmental state constitutes an essential antecedent to the firm's strategic response capability.



**Figure 1. How Sensing and Anticipations drive the Firm's Strategic Response Capability**

*The sensing capability* relates to stakeholder anticipatory processing of emergent strategic issues in the current environmental state and its predictive accuracy when collected through advanced information aggregation techniques directly from the stakeholders' sensing-anticipation content.

*The response capability* is comprised by strategic issue identification where stakeholders identify threats and opportunities based on their sense of the firm's operational conditions drawn from their sensing capability. This information uncovers a range of suggested responses (an ideation process) to impending environmental issues and provides decision makers with identified issues coupled with solutions to deal with them. It helps decision makers perform problem sensing and conceptualizing responses to anticipated environmental changes (Heinrichs and Lim, 2008; Kiesler and Sproull, 1982). Since this depends on the decision makers' mental models and strategic response patterns there is a need for a balanced strategic response formulation capability for decision making drawing on insights from anticipatory processing of many diverse stakeholders (Heinrichs and Lim, 2008).

*The reconfiguration capability* relates to the subsequent execution of the problem/opportunity solutions uncovered from stakeholder anticipatory processing and issue identification and relies on the ability to implement the formulated strategic responses in the organization.

### **The role of stakeholders**

One of the key issues in strategic management is to explain why some firms outperform others (Rumelt, Schendel, and Teece, 1994) and the stakeholder concept has played an important role in this context during the early development of the strategy field (Harrison et al., 2010). Hence, there is general agreement that to achieve high performance firms should adopt a strategy-making perspective that incorporates the needs and demands of multiple stakeholder groups (Ackermann and Eden, 2011; Harrison et al., 2010).

In some of the earliest work on stakeholder theory, stakeholders are conceptualized as "those groups without whose support the organization would cease to exist" (Freeman and Reed, 1983: 89). However, strategy scholars have suggested including those groups or individuals who are immediately affected by the organization as well as a broader group of constituents that can influence the future activities of the firm (Freeman and McVea, 2001; Harrison et al. 2010). Consequently, stakeholders are seen as a varied group characterized by various demands they can put on the organization. However, Mitchell, Agle, and Wood (1997) point out that the broad concept of stakeholder management must be clarified to better serve the narrower interests of the firm's legitimate stakeholders. Consequently, scholars consider the micro-foundations of stakeholder theory looking at performance mechanisms that operate at the individual level, such as, motivational effects (Bridoux and Stoelhorst 2014), perceived fairness (Bosse, Phillips and Harrison, 2009) and organizational justice (Harrison et al. 2010).

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The challenge in operationalizing stakeholder theory is the consideration of the most relevant stakeholders. Consistent with the proposed framework, we focus on primary stakeholders defined as those most closely associated with the firm's operational activities where they accumulate intricate knowledge about operational processes and external factors that influence organizational activities. The direct involvement of primary stakeholders in the core activities of the firm make them prime candidates to form reliable sensing and anticipations about the future state of the firm. In line with Harrison et al. (2010) we define the groups of primary organizational stakeholders as employees, managers, customers, suppliers and the firm's owners (i.e., shareholders, partners and/or members).

### **Cognitive neuroscience in anticipatory processing**

The emphasis on anticipations and predictive mechanisms originate from very early phases of both the psychology and neurosciences fields (e.g., MacKay, 1956), but it is not until recently they have been advocated in cognitive and neural processing frameworks. Anticipations have been brought back to life in numerous areas of research where they are triggering both small and larger-scale paradigm shifts (for a review see Bubic, Cramon, Schubotz, 2010). Traditionally the cognitive approaches to anticipations adhere to delineated frameworks postulating a serial process, starting with sensory (sensing), continuing with executive and "higher cognitive" functions and ending in overt behaviour (Ibid, 2010). However, newer cognitive neuroscience research demonstrate that anticipatory processing is associated with a wide range of neural phenomena in different brain networks, such as, sensory cortices, the thalamus, prefrontal cortex and motor system, that may or may not, be affected serially (e.g., Gomez, Vaquero, Vazquez-Marrufo, 2004; Gross et al., 2006; O'Reilly, Mesulam and Nobre, 2008). They depend on different factors, such as, the strength of the relationship between different event stimuli, their frequency, specificity and context of occurrence (Pezzulo, 2008). Yet, experimental evidence suggests that there is an interdependent relationship between stimuli perception (sensing) and anticipation as they engage the same networks (Carlsson et al., 2000) and one way to conceptualize anticipatory processing is as a bias signal that improves the computational efficiency of a specific stimuli (Rees and Frith, 1998). This bridging over different temporal points while adhering to the past to improve future behavior is suggested as the core capacity that makes the human cognitive brain so efficient (Kveraga, Boshyan and Bar, 2007).

### ***Sensing capabilities***

The firm's sensing capability depends in part on the individual cognitive capabilities of people involved with organizational activities and the learning capacity of the organization these individuals are associated with (Burrell and Morgan, 1979; Daft and Weick, 1984). It is argued that companies are vulnerable and exposed to too much uncertainty if the sensing and learning functions of sensing are left only to few decision makers (Teece, 2007). In other words, using sensing information from multiple stakeholders to identify strategic issues and seize new opportunities can adapt the strategic direction of the firm. This view is in agreement with recent stakeholder management theory as a source of competitive advantage (Ackermann and Eden, 2011; Harrison et al., 2010). Accordingly, sensing capabilities are an essential element of Teece's (2007) microfoundations framework. It is argued that "opportunity discovery and creation originate from the cognitive and creative ('right brain') capacities of individuals, requiring access to information and the ability to recognize, sense, and shape developments and groups to blend effortful forms of analysis with the skilled utilization of less deliberative, intuitive processes" (Hodgkinson and Healey, 2011: 1502). Hence, there is a call for more emphasis on the psychological foundations of sensing, asserting that sensing embeds both reflexive (i.e., intuition, implicit associations) and reflective (i.e., explicit reasoning, cognitive and emotional capabilities) (Hodgkinson and Healey, 2011).

A particular advantage of reflexive processes is the ability to rapidly see through plenty of information about trends in the business environment to reach effective judgments on opportunities and threats (Hodgkinson and Healey, 2011). For instance, Llinas (2002) find that prediction processing saves resources and makes it possible for the perceiver to prepare an appropriate reaction. As such, predictions can lead to faster recognition and interpretation of events encountered in the environment (Bar, 2007) by limiting the repertoire of potential responses to such events. This is supported in other empirical cognitive studies showing that improved speed and accuracy in the anticipatory processing reflects comparable patterns of activity in stimuli perception and anticipation (Brunia, 1999). By comparing sensing and predictions from several groups of individuals over time, it is possible to assess the conditions for a crowd to be more accurate

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in its predictions. Studies have already looked at the conditions that should be met in order to make strong predictions by groups, such as, the firm's stakeholders (Thompson, 2012). They conclude that for higher accuracy to occur, the group must be sophisticated and sufficiently diverse (Hong and Page, 2004).

**Proposition 1:** *Organizations that collect and aggregate anticipatory information from their primary stakeholders gain more accurate information about changes in the business environment that improves their sensing capability and thereby strengthens the firm's strategic response capability*

**Proposition 2:** *Organizations that use information aggregation techniques to process stakeholder anticipatory information can obtain insights about important environmental changes that improve their sensing capability and thereby strengthens the firm's strategic response capability.*

### **Response capabilities**

The benefits of anticipations have been recognized both in the motor and perceptual domains of the human brain (Bubic et al, 2010). The measurable benefits of anticipatory processing include an increase in accuracy, speed and maintenance of information processing (LaBerge, 1995). By relying on sensing and anticipations as informational sources, decision making will be available faster and with a high degree of accuracy. This means that information to identify issues and formulate appropriate adaptive responses will be available much sooner (Ibid, 1995) than would otherwise be the case in the firm's strategic planning process. So anticipations allow the firm to construct a coherent and stable representation of the environment faster, which is usually not so easy, given the often impoverished (noisy and delayed) information available (Kveraga et al., 2007). It may also improve information seeking as well as attention to subsequent decisions (Butz and Pezzulo, 2008). This corroborates empirical studies observing that fast decision-makers collect more information and develop more alternatives than do the slow decision-makers (Eisenhardt, 1989). Furthermore, involving multiple knowledgeable informants coupled with instant access to updated on-line data sources provide the best decisions information as it reduces uncertainty perceptions. Thus we suggest;

**Proposition 3:** *Decision makers that rely on anticipatory information from many of the firm's primary stakeholders will obtain more accurate environmental information faster for use in identifying essential strategic issues, which improves the firm's strategic response capability.*

**Proposition 4:** *Decision makers that rely on anticipatory information from many of the firm's primary stakeholders will obtain more accurate environmental information faster for use in strategic response formulation, which improves the firm's strategic response capability.*

### **Discussion**

This work contributes to the strategy literature in several ways. It outlines a much needed framework for the firm's strategic response capabilities based on a novel inclusion of essential sensing and anticipations collected from the firm's primary stakeholders as first-hand sources for updated environmental information. The theoretical rationale around the framework draws on contributions from cognitive neuroscience to explain stakeholder sensing and anticipations, which is a much needed microfoundational element, and integrates this with prevailing literatures in marketing and strategy. Furthermore, the study links these faster and more accurate informational sources to the firms' strategic decision-making process with a potential to update conventional strategic planning models with more timely strategic control interventions that allow the firm to adapt its strategic course more frequently and in a more proactive manner. In short, we develop a framework to facilitate better strategic responses that can be linked to the firm's strategic decision-making processes in concrete operationalized techniques and processes while providing a basis for ongoing analysis of the micro-foundations of effective strategic response capabilities.

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