

Minding the cognition: toward a strategic knowledge management for competitive advantage

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- *The knowledge base of an organization is considered its intellectual capital, and is increasingly emphasized as a vital source of competitive advantage. Engineering, managing, and leveraging knowledge (individual-, group-, and organizational-level knowledge) are becoming strategic activities in many organizations for achieving competitive advantage.*
- *In this context, building organizational capabilities to acquire, create, and disseminate knowledge on a continual basis has become a key challenge for strategy and organizational design experts. While the research and practice in this regard has focused extensively on Information Technology (IT) capabilities for building knowledge communities, the process dimension of learning, knowledge creation, and dissemination has received less attention.*
- *This paper articulates the need for cultivating the various learning as well as socio-cognitive routines to create and leverage knowledge and suggests how this approach would help formulate better strategies and enhance employees' commitment.*
- *This article also highlights the importance of a dynamic approach to managing organizational cognition, a critical factor in organization survival. We further discuss the implications for strategic management and organization development practices.*

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Introduction

A firm's ability to continually acquire, create, and disseminate knowledge across various levels of the organization is vital to its survival and to securing competitive advantage (Allee, 2000; Sveiby, 2001). The organizational capability to learn from internal and external environments is essential to manage emergent opportunities/threats. Many organizational scholars have recently recognized that this

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dynamic learning capability is a valuable, inimitable, and socially complex resource that can help an organization renew itself and

overcome the challenges from complex business environments (Allee, 2000; Nonaka *et al.*, 2000). This capability is a systemic process that leverages individual creativity, manages the organizational mindset (or mental models), and facilitates employee interactions at various levels for sharing individual- and group-level knowledge throughout the organization (Ginsberg, 1994; Sveiby, 2001). This paper articulates how a knowledge-centered strategy process will foster collective learning and dynamic capabilities and highlights the role of certain organizational development practices in building a knowledge enterprise.

Organizational learning and competitive advantage

Conventional managerial problem-solving and learning approaches often stress the use of rational and goal-specific tools with an emphasis on logic of efficiency and utility (Arthur, 1994; March and Olsen, 1976). Managers who believe in such a conventional wisdom habitually carry static assumptions about the business environment in a 'Newtonian' sense, presuming predictability in organization-environment relationships, and taking for granted an alignment between managerial choices and employees' commitment (March and Olsen, 1976). Under the rubric of rational approaches, managerial discourses are often guided by quantitative data and analytical techniques or models that are considered objective means to formulate strategic response and to maintain alignment between organization and environment. Recent advancements in information technology have also augmented the use of quantitative approaches and reinforced a strong notion of objectivity in decision-making. For example, in strategic planning, managers often use analytical tools such as the BCG matrix, forecasting techniques, market segmentation, and pricing tools as if they are the objective means to interpret information and make decisions.

Nevertheless, the limitations of rational and causal logic espoused in analytical tools have

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been examined by several scholars (March and Olsen, 1976; Simon, 1993). Let me highlight a few of these limitations by tracing the extant literature on this issue. First, organizations are constantly exposed to unclear, ambiguous, and turbulent environments because of unpredictable responses from competitors and consumers, abrupt discontinuities in technology lifecycles, and radical changes in socio-political/cultural environments. Second, in real situations, managerial and organizational learning is often shaped by situation-specific contextual attentions rather than objectivity of information and data. Third, many analytical approaches to problem-solving are deductive and data-driven and do not adequately capture the intuitive and personal knowledge of employees. Moreover, relying too much on data-driven tools and simplifying information into neat analytical models often results in cognitive rigidity that in turn may hinder creativity and learning (Prahalad and Bettis, 1986). These limitations deserve managerial attention and necessitate facilitating real-time learning across all levels of the organization to make effective decisions. Managers failing to recognize these limitations will miss opportunities to create new knowledge by utilizing the subjective experience of individuals. Without capturing the experiential knowledge of significant stakeholders in a real-time fashion, organizational learning and consequent actions will remain disconnected from the emerging realities.

In this context, it is also important to recognize that researchers have found an inconsistent relationship between the use of formal planning processes and performance (Pearce *et al.*, 1987a,b; Powell, 1992). For example, Powell (1992) examined the industries where formal strategic planning practice is widely disseminated (labeled as planning equilibrium industries) and found that the correlation between formal strategic planning and profitability does not differ significantly from zero. It may be that formal decision tools/methods are neither unique nor effective in facilitating creative solutions that combine the resources in unique ways, discover new market positions, or generate new resources.

In light of the above arguments, this paper contends that managers need to employ certain cognitive heuristics and socio-cognitive learn-

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ing mechanisms to build a creative, flexible, and dynamic knowledge-based organization. It is further argued that strategic management is essentially an organization-wide, dynamic process of knowledge engineering and management that involves creating and sharing knowledge. A strategic knowledge

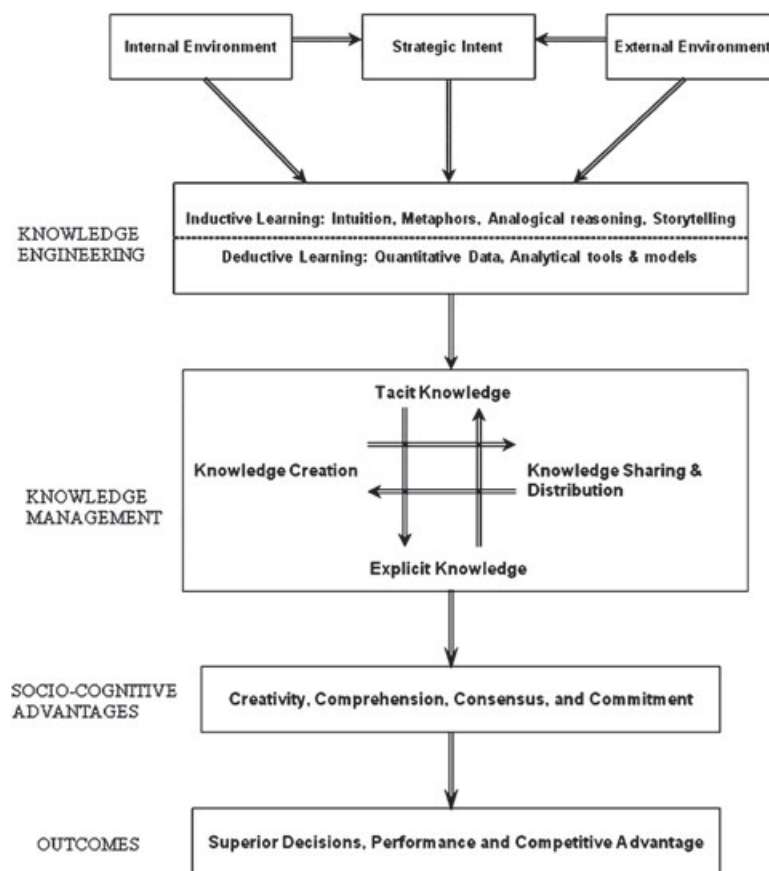


Figure 1. A knowledge-based strategic management process.

management model that combines both inductive and deductive heuristics for knowledge creation, and that emphasizes knowledge-sharing, is presented in Figure 1. In this model, knowledge engineering is referred to as the use of specific cognitive heuristics through which knowledge is deduced and/or induced from the internal and external environments for problem-solving by organizational members. Knowledge management refers to various socio-cognitive mechanisms (e.g., socialization, communication) and management practices (e.g., communities of practice, self-managed teams, intranet, etc.) that facilitate acquisition, creation, and transfer of relevant knowledge across individuals, groups, and levels of organization.

Cognitive routines, learning, and knowledge creation

To manage the complex and ever-changing environment, managers have to challenge and modify their practices on a continual basis. This will happen only if managers and employees learn to generate innovative solutions. As suggested by Simon (1993), 'effective organizational learning is essentially shaping the future that involves anticipating the character of uncertain future, generating new plans, and successfully implementing new plans'. In many organizations, knowledge creation is constrained because the learning routines are rigidly structured by industry norms, rules of thumb, and deductive data-driven analyses that reduce the scope of variety in managerial/employee cognition (Schwenk, 1988; Simon, 1993). Because such learning processes are not suitable in complex and dynamic business environments (Holland *et al.*, 1986), there is a need to blend or use flexible cognitive/learning heuristics along with deductive learning processes. We believe that the use of inductive heuristics such as intuitive reasoning, story-telling, employing metaphoric puzzles and analogies in discourses and problem-solving enhances the cognitive flexibility and variety required for effective organizational learning.

Induction is a cognitive process associated with learning/problem-solving activity, and it generates mental models that 'approximate the ideal' rather than seeking an 'absolutely true knowledge of reality' (Holland *et al.*, 1986). Inductive process embodies a holistic thinking style that entails the creation of knowledge from related knowledge domains through dialogic exchanges of stories, symbols, metaphors, and analogies (Arthur, 1994). The inductive process also involves sharing of tacit knowledge that is generated through insights, intuition, and hunches from experience (Polanyi, 1966). This tacit knowledge is personal, context-specific, and difficult to verbalize or communicate (Krogh *et al.*, 2000; Nonaka *et al.*, 2000).

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Cognitive psychologists suggest that in situations that are complex, inductive learning is more effective and less risky than analytical learning (Holland *et al.*, 1986). The inductive mode of learning involves the use of intersubstitutable probabilistic cues and is therefore 'uncertainty geared'. Inductive learning results in knowledge characterized by a preponderance of 'approximately' correct decisions/solutions with relatively few judgments that are erroneous (Brunswik, 1956). On the other hand, analytical learning is 'certainty geared' and results in knowledge characterized by a preponderance of either precisely correct decisions or entirely erroneous decisions (McKenney and Keen, 1974; Peters *et al.*,

1974). Thus, in complex problem situations where small departures from precision are tolerable — but where extreme decision errors may lead to debacle — the inductive approaches are better problem-solving/decision-making methods than analytical methods. Studies on human cognition suggest that people are capable of detecting most of the relevant variations/changes in the environment provided they are motivated and allowed to take cognitive risks in their learning process (Holland *et al.*, 1986). Because inductive reasoning allows for parallel development of multiple mental models, and creates competing inferences about the problem situation, it can be considered a ‘*coevolving*’ and ‘*adaptive*’ learning process. Thus, to develop a flexible knowledge structure within the organization, inductive learning and experiential knowledge of individual employees have become important in strategic management process. By utilizing the diverse experiential knowledge that resides at various organizational levels for problem-solving, a firm can enhance its creative capacity and resource variety.

Many knowledge-intensive firms are creating systems and group processes to tap the experiential knowledge of individuals for the benefit of the whole organization

Effective use of such inductive approaches to enrich the learning and knowledge-creation process is a complex managerial task. Many knowledge-intensive firms are creating systems and group processes to tap the experiential knowledge of individuals for the benefit of the whole organization. Instead of enforcing top management’s singular formula/recipe, knowledge-driven firms encourage employees to take cognitive risk in interpreting various cues

from the external and internal environments. By facilitating the exchange of individuals’ personal, experiential knowledge/insights through dialogue, organizations can develop a knowledge pool of ideas and alternatives to solve organizational problems. The views and actions of individuals and groups within the organization become more dynamic and flexible in the knowledge-based framework. How a knowledge-based model of strategy process enhances creativity, innovation, commitment, and continuous learning needs further explanation.

Socio-cognitive advantages through knowledge-based strategy process

There are several advantages in treating knowledge engineering and management as a meta-strategic process. In a knowledge-based strategy process, inductive processes are blended with objective analytical tools to leverage employees’ knowledge for enhancing organizational learning capabilities. The nature of change dynamics and the role of cognitive heuristics in creating socio-cognitive advantages and in turn competitive advantage are discussed below.

Employee participation and commitment:

Managers may employ decision-making tools that emphasize uncertainty reduction in outcomes by limiting the information flow and forcing a top-down communication. In this approach, top management routinely assumes a pivotal role for idea or strategy formation. The middle-level and front-line employees are expected to execute the tasks to achieve the goals set by top management. This formal approach reduces the involvement and commitment of employees. However, in knowledge-based organizations, the decision-making process will be considered a synthesis of various lateral and bottom-up flows of information. In knowledge-based process, managers design coordinating mechanisms to elicit information not only from front-line employees but also from distributors, suppliers, and other important stakeholders. Use of the real-time

experiential knowledge from multiple sources allows managers to troubleshoot the problems quickly and identify new opportunities. Involving employees in the planning process motivates them to note changes in the environment. For example, Hewlett-Packard uses simulation exercises where employees pretend they are customers and evaluate the competitors' products. This not only energizes employees to note changes in environment but renews the mindset of the whole organization.

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As Polanyi (1966) observed, commitment is the central element of comprehension and creativity. People detect environmental cues and learn only if the cues are relevant to their goals and purposes (Neisser, 1976). An organization's strategic intent/vision must stimulate the commitment to learn among employees. Developing enlightening strategic intent and fostering shared mental models and values with regard to shareholder expectations, customer service, competition, and social responsibilities will enhance the employees' commitment to learn. In addition, many organizations are implementing designs such as the self-managed teams, communities of practice, and autonomous task forces that are found to be effective in generating the involvement and motivation essential for learning (Senge, 1994).

Ambiguity and creativity: In dynamic knowledge-based organizations, managers exploit ambiguity and chaos to create superior knowledge of the system and environment. Instead

of sticking to singular vision, managers set changing agendas and flexible mental models that dynamically alter the existing perspectives and inspire the organizational members to engage in dialogue in search of new concepts, ideas, or solutions (Stacey, 1995). Ambiguity combines a sense of controlling and not controlling the events and offers intellectual challenges leading to creative solutions (McCaskey, 1988). Tolerance for ambiguity and openness to challenges enhances the ability of individuals to detect variations in the environment and develop new knowledge (Chapman and Chapman, 1967). In knowledge-intensive organizations, managers foster a work climate that encourages the employees to tolerate ambiguity and challenge. Such organizations also promote counter-cultures that challenge the existing goals and values to change strategic agendas (Stacey, 1995).

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Information variety and amplification: Organizations can cope with many contingencies if employees have information that allows them to interpret and combine information in new ways to arrive at multiple and creative solutions. Successful knowledge-driven firms do not constrain information vertically within functions. They synergistically distribute information widely to facilitate the potential usage of information (Day, 1995). Organizations also need to diversify the tools and techniques for analyzing the information. The information variety will be constrained if the individuals in a group setting employ the same reasoning process for problem-solving (Argyris and

Schon, 1978). Such homogeneity in reasoning may lead to groupthink and may not produce reliable information while dealing with ambiguous data. On the other hand, heterogeneity in interpreting data not only results in multiple solutions but also helps the organization develop unique/idiosyncratic choices. In situations where precise information is not available, managers need to encourage employees to share their own insights with others to arrive at optimal solutions. Managers can also amplify the information variety using context-specific social sanctions and probing communication techniques.

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Research shows that people tend to overestimate the consistency and predictability of social phenomena, and they tend to act based on specific information, even if it is weak (Kahneman and Tversky, 1973; Nisbett and Ross, 1980). This often results in misunderstanding and poor-quality decisions, so it is essential that an organization provide either very accurate information to employees or float rules for general categorization/re-categorization of ambiguous environmental cues. In other words, there should be flexibility in categorizing and classifying information about markets, resources, etc. The need for more general and flexible categorization of information in the absence of accurate information demands that problem-solving be facilitated by informational richness and diversity.

Implications and conclusion

Given the emphasis on continuous knowledge creation and sharing, there is a need for managers to develop and use appropriate social rules, verbal protocols, and communication channels that facilitate dynamic inferences and exchanges of knowledge. Fostering a climate of dialogue with the intent of exchanging ideas and learning from one another is critical for building a knowledge-based organization. Dialogue allows individuals to articulate their subjective knowledge through metaphorical puzzles, analogies, and stories. Because all stakeholders are considered significant contributors to knowledge creation, it is essential that the organization distribute and receive information synergistically both inside and outside. If firms are standoffish to their employees, customers, suppliers, and other stakeholders, communication channels become blocked and distorted with misinformation. Good working relationships with various stakeholders are vital for the flow of valuable knowledge. For example, knowledge-centered organizations such as Microsoft, Hewlett-Packard, and Motorola have formed complete information ecosystems to unite employees, suppliers, and distributors into an intellectual community.

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Knowledge exchanges between employees and external constituencies can be enhanced by job rotation techniques, by encouraging participation in product/technology conferences, by creating partnerships/alliances with suppliers and competitors, and by organizing marketing/customer education events. To transfer knowledge from individual level to organizational structure and vice versa, firms

need to develop effective human-computer interfaces, action-based learning processes, simulations, and interactive e-learning environments. Activities such as establishing extranets, product tracking, help desks, and e-business will improve the knowledge transfer from internal to external structure. To create knowledge out of data, companies should establish data warehousing, data marts, and data mining.

It is important for managers to understand the link between socio-linguistic/socio-cognitive processes (for example, framing, structuring, story-telling, social rituals, and protocols) and knowledge connectivity and to recognize the conditions under which knowledge creation is nurtured or stifled. Organization development (OD) consultants can develop collaborative and consensus-building socio-linguistic 'frames' to help managers and employees solve problems, find creative solutions, and reconcile differences. OD consultants can play an effective role in helping managers create organizational systems that facilitate information-sharing among employees. Because employees' knowledge itself is a competitive advantage, the extent to which their knowledge is distributed and shared indicates the potential of generating competitive advantage.

Having emphasized the importance of knowledge-based strategy process, this article encourages further dialogue on the role and effectiveness of knowledge management techniques in formulating and implementing competitive strategies. This article delineates the connections among learning, decision-making, and socio-cognitive advantages, and explains how these mechanisms are related to superior decisions, performance, and competitive advantage. This article further reiterates why the issue of creating, acquiring, and sharing knowledge becomes a central concern in strategy process and recommends establishing formal knowledge management initiatives to link knowledge and strategy.

Biographical note

Sentbil Muthusamy is an Associate Professor of Strategic Management at Bowling Green

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