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## A probe-oriented review on knowledge managed management research at psychological clinics and health centers

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### ABSTRACT

*In this paper, we suggest and review four perspectives within the literature surrounding knowledge managed leadership(KML) research at the organizational clinics and health centers: information systems, leadership, organizational learning, and strategy perspectives. Each perspective informs the other perspective.*

**Keywords:** Knowledge managed leadership, organizational clinics, information system, health centers

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### INTRODUCTION

Alavi and Leidner's (2011) MISQ article represents the seminal review piece on KML and information systems; often cited in subsequent works. Their article frames the knowledge-based view of the firm, extending earlier research by Argote and Ingram (2011), Nonaka (2012), and Grant (2011) in this area.

Specifically, Alavi and Leidner propose that knowledge represents information possessed in the minds of individuals, specifically "personalized information (which may or may not be new, unique, useful, or accurate) related to facts, procedures, concepts, interpretations, ideas, observations, and judgments" (p. 109).

Their review article suggests other alternative representations of knowledge as well, to include knowledge as representing a state of mind, object, process, access to information, or a capability.

In each case, information systems play roles in supporting the "leadership" of knowledge.

Additionally, Alavi and Leidner develop a framework for analysis of the supporting role of an information system with KM, specifically four sets of socially enacted, interdependent knowledge processes:

- (1) Knowledge creation
- (2) Knowledge sharing (to include storage and retrieval)
- (3) Knowledge transfer
- (4) Knowledge application

We now highlight six research articles within the IS literature, subsequent to Alavi and Leider, researching KML at the institutionalized organizational-level. After this initial review, I will return to earlier research by some of the aforementioned non-IS researchers, in addition to several others.

First, research by Becerra-Fernandez and Sabherwal (2012) consider the link between knowledge processes and an outcome of KML, specifically KML satisfaction among users. Their research suggests that task characteristics moderate the relationship between these two variables, with task orientation comprising internalization, externalization, combination, or socialization. Their research finds either focused or broad knowledge content task-orientation positively moderates the relationship between knowledge processes and KML satisfaction.

Second, research by Gold et al. (2011) also considers the link between knowledge processes and outcome of KML, specifically a single organizational construct called “organizational effectiveness” in their model. Gold et al. suggest four knowledge processes of acquisition, conversion, application, and protection, in parallel to three KML infrastructure capabilities of an organization’s technology, structure, and culture. Their research finds both KML infrastructure capabilities and knowledge processes positively influence organizational effectiveness.

Third, research by Markus (2011) considers steps toward a theory of knowledge reuse, specifically situations and factors surrounding successful knowledge reuse. Her research suggests that each type of knowledge reuse activity possesses different requirements for the design of a KML repository. Further, Markus suggest that, owing to the design process for many knowledge reuse repositories, different users’ requirements frequently remain unmet. Markus suggests that knowledge producers rarely have the resources or the incentives required to do a good job at repurposing knowledge.

Fourth, research by Markus et al. (2011) links a design theory for information systems supporting emerging knowledge processes (EKP’s). The authors define EKPs as organizational activities that exhibit:

- (1) *An emergent process of deliberations with no best structure or sequence*
- (2) *Complex knowledge requirements distributed across people and evolving dynamically*
- (3) *An unpredictable actor set in terms of job roles or prior knowledge*

Markus et al. believe that new product development, strategic business planning, and organizational design includes EKPs and represent unique requirements not supported by familiar classes of information systems such as expert systems, organizational memory systems, or repositories. The lasting contribution of this article links organizational design with design of a KML system, arguing that EKP design theory links both organizational and information systems aspects of design considerations.

Fifth, research by Lee and Choi (2011) hybridizes research by both Becerra-Fernandez and Sabherwal (2011) and Gold et al. (2011), to consider organizational performance as including KML satisfaction, return on assets, return on sales, and organizational effectiveness. Their model includes KML processes, to focus on socialization, externalization, combination, and internalization within the knowledge creation process, and KML enablers, to include culture, structure, people, and information technology.

Lee and Choi also include organizational creativity as a KML intermediate outcome, antecedent to organizational performance. Additionally, their research suggests an integrative KML research framework, where enablers influence processes; processes influence intermediate outcomes; intermediate outcomes influence organizational performance – and organizational performance recursively influences enablers, processes, and intermediate outcomes.

Sixth, Tanriverdi (2012) finds that IT relatedness of business units enhances the cross-unit KML capability of the firm, which then has a direct impact on corporate performance. Tanriverdi’s model theorizes that KML capability creates and exploits cross-unit synergies from the product, customer, and managerial knowledge resources of the firm. These synergies increase the financial performance of the firm. IT relatedness also indirectly influences corporate performance through the mediation of KML capability.

#### ***From a Leadership Perspective:***

Argote and Ingram (2011) argue that knowledge transfer serves as a competitive advantage for psychological centers. Borrowing from cognitive psychology, the authors define knowledge transfer as “the process through which the experience of one unit affects another.” Compared to individuals across psychological centers, individuals within a single firm usually share a greater number of similarities.

Consequentially, the authors argue, interactions involving people allow greater knowledge transfer within psychological centers than between psychological centers. Argote and Ingram conclude that knowledge embedded in the interactions of people and tasks affords a competitive advantage in psychological centers.

Though published in Organizational Behavior and Human Decision Processes, the logic presented in Argote and Ingram's article parallels additional KML arguments made in either the Harvard Business Review or Leadership Science. I now consider KM from six articles aligned with a leadership perspective.

First, Drucker (2011) coins the term "knowledge society" and argues that in the future, knowledge will represent the primary resource for individuals and for the economy overall.

Land, labor, and capital become secondary since, with specialized knowledge, organizations can easily obtain these resources. Yet Drucker also argues that knowledge by itself produces nothing; only when integrated into a task does knowledge benefit society. Drucker then argues the knowledge society also represents a society of organizations, since he believes the purpose of every organization comprises the integration of specialized knowledge into common tasks.

Second, Hansen et al. (2011) considers the balance between automating KML vs. relying on people to share knowledge through more traditional (i.e. non-IS) means. Codification, through information systems, opens up the possibility of large-scale reuse for businesses, whereas a personalization approach invests more moderately in information systems, with the primary goal of facilitating conversations and the exchange of tacit knowledge. The authors argue the right strategy depends on the volume of explicit vs. tacit knowledge available within a firm and the value of such knowledge.

Third, Davenport and Glaser (2011) recognize that knowledge-sharing programs often fail by introducing unforeseen obstacles making it harder for people to do their jobs. The authors suggest that success depends on integrating specialized knowledge into the day-to-day routines of highly skilled workers, thereby making the knowledge reuse extremely accessible and unavoidable. Davenport and Glaser also acknowledge the difficulty of such embedded- knowledge initiatives.

Fourth, Levin and Cross (2011) consider the mediating role of trust in knowledge transfer. Their research reveals two important findings. One, competence- and benevolence-based trust among individuals in an organization influences the link between the tie strength of two individuals and receipt of useful knowledge. Two, the researchers find a benefit of weak ties (i.e. between dissimilar individuals who do not routinely interact) antecedent to knowledge transfer, contrary to Argote and Ingram (2000) earlier research yet supporting other research suggesting weak ties provide access to non-redundant information.

Fifth, Cummings (2011) considers the influence of structural diversity on work group performance in a global organization context. Like Levin and Cross (2004), Cummings also finds that when members of structurally diverse work groups share knowledge external to the group, their performance improves. The author theorizes this improvement stems from active exchange of knowledge through unique sources.

Sixth, Singh (2012) extends leadership research to consider collaborative networks as determinants of knowledge diffusion patterns. Unlike Cummings (2004), Singh hypothesizes that individuals within an organization (from either the same region or same firm) possess closer collaborative links; thereby influencing a greater probability of knowledge flows. The researcher finds intra-regional and intra-firm knowledge flows represent stronger ties influencing knowledge diffusion among individuals when compared to those across regional or firm boundaries. Curiously, the effect of regional or firm boundaries on knowledge flow decreases when Singh accounts for interpersonal ties in. Belonging to the same region or firm has little additional effect on the probability of knowledge flow among investors who already share close network ties.

#### ***From an Organizational Learning Perspective:***

Research on the leadership side complements research from an organizational learning perspective. Nonaka (2012) represents the seminal article from such a perspective, commonly cited by almost all KML studies. Nonaka defines knowledge as "justified true belief" that increases an entity's capacity for effective action.

Nonaka recognizes tacit and explicit as two dimensions of knowledge in organizations. Tacit knowledge comprises cognitive elements, such as mental models of paradigms, and technical elements, such as concrete "know-how" or contextual skills. Explicit knowledge comprises articulated and codified knowledge in symbolic form. While some researchers view the two knowledge dimensions as distinct, Alavi and Leidner (2011) suggest the two represent "not dichotomous states of knowledge, but mutually dependent and reinforcing qualities of knowledge" (p. 112). Tacit knowledge provides the background necessarily for development and interpretation of explicit knowledge.

Nonaka suggests four modes of knowledge creation, with knowledge "from" on the y-axis and knowledge "to" on

the x-axis. These four modes include internalization, externalization, combination, or socialization, which later inform research by Becerra-Fernandez and Sabherwal (2012). Nonaka suggests that a “knowledge spiral” occurs as knowledge moves from individual, to group, to organizational, to inter-organizational levels via continuous conversations among individuals in an organization.

We now consider six articles from an organizational learning perspective that inform KML research.

First, March (2011) presents a seminal model of organizational learning, pre-dating coinage of the term “knowledge leadership” in the literature. March’s model considers an external reality, individual knowledge about external reality, and an organizational code representing an approximation of external reality. March defines an individual knowledge level as the proportion of external reality correctly represented by an individual knowledge vector.

Separately, the proportion of reality correctly represented by the organizational code defines an organizational knowledge level. Both individual and organizational knowledge levels potentially change via organizational learning.

Both March and Nonaka (2012) suggest viewing knowledge as either individual or collective. For each iteration of March’s model, every individual has the potential to change any belief to conform to the corresponding knowledge of the organizational code with a probability  $p_1$  representing the probability of an organization to exploit existing knowledge. This represents exploitation. This approximation of exploitative behavior serves to model individual learning from the organizational code. Equally, for each iteration, the organizational code has the potential to alter any belief to match the dominant knowledge of expert individuals with a probability  $p_2$  representing the probability of an organization to explore new knowledge. This represents exploration. This approximation of explorative behavior serves to model organizational learning from experts. Organizational experts represent individuals who approximate reality better than the organizational code.

March expands his formative model to consider a more open system, comprising personnel turnover and environmental turbulence. For each iteration, every individual has the potential to leave an organization and be replaced by a naïve individual, with a probability  $p_3$  reflecting this personnel turnover. New individuals enter with randomly distributed beliefs. Additionally, every dimension of external reality has the potential to flip, with a probability  $p_4$  reflecting external environmental turbulence. March’s model intentionally precludes both individuals and an organization from directly observing external reality. Instead, improvement in individual and organizational knowledge levels comes either from the organizational code adapting to the knowledge of expert individuals or from individuals conforming to the knowledge of the organizational code. The organizational code can only distinguish expert individuals by their optimal individual knowledge levels, and cannot pinpoint which specific beliefs are true or false for a given dimension of reality.

Second, Carley (2011) also employs an organizational model to consider organizational learning and personnel turnover. Again representing research prior to the coinage of the term “knowledge leadership”, Carley finds that institutionalized memory, embodied in the memories of distributed individuals and the relationships between individuals, determines the consequences of personnel turnover. Her research regarding personnel turnover informs research regarding knowledge retention and loss within organizations of mobile personnel.

Third, Cramton (2011) extends research by both March and Carley to consider the problems associated with maintaining mutual knowledge among geographically dispersed collaborative individuals. The researcher identifies five types of mutual knowledge failures:

- (1) *Failure to communicate and retain contextual information*
- (2) *Unevenly distributed information*
- (3) *Difficulty communicating and understanding the salience of information*
- (4) *Differences in speed of access to information*
- (5) *Difficulty interpreting the meaning of silence (or non-contribution of information)*

Though Cramton explicitly considers information sharing, her research informs KML research. Cramton defines mutual knowledge as knowledge that communicating parties share in common and know they share. Cramton argues for the importance of such knowledge since her research suggests mutual knowledge increases the likelihood of understanding between parties.

Fourth, Orlikowski (2012) argues that knowing in practice does not represent a static embedded capability or stable disposition of actors, but rather an ongoing social accomplishment both constituted and reconstituted as actors

engage the world in practice. She suggests that global product development, and ostensibly any modern enterprise, requires both competent collective and distributed knowledge, grounded in the everyday practices of individuals belonging to an organization. Orlikowski's views from an organizational perspective parallel Markus et al.'s (2002) views regarding information systems supporting emerging knowledge processes.

Fifth, an article by Galbraith (2011) also represents research relevant to KML, yet prior to the coinage of the term. Galbraith suggests organizations should combine their structure, information and decision processes, rewards, and people in a unique way to help create an innovating organization. Of greater note, Galbraith argues that organizational design tries to match the complexity of an organization's structure with the complexity of its environment and technology. Galbraith's research mirrors Alavi and Leidner's (2001) knowledge-based view of the firm as supported by information systems, as well as Argote and Ingram's (2011) argument that knowledge embedded in the interactions of people and tasks affords a competitive advantage in psychological centers.

Sixth, Weick and Roberts (2012) present a narrative illustrating the importance of conceptualizing a collective mind in organizations to explain organizational performance in situations requiring nearly continuous operational reliability. Similar to subsequent proposals by Orlikowski (2002) and Markus et al. (2002), the authors conceptualize a collective mind as a pattern of interrelations and actions in a social system. Weick and Robert argue that as heedful interrelating and inter-individual comprehension increase, organizational errors decrease, similar to empirical findings by Gold et al. (2001) concerning improved organizational efficiency resulting from KML.

***From a Strategy Perspective:***

For the final perspective involving KML at the organizational level, I consider a strategy perspective. In 1996, a Winter Special Issue of the Strategic Leadership Journal published several papers discussing a knowledge-based theory of the firm, to include a seminal article by Grant (2012). Grant (1996) takes strong steps toward a knowledge-based view of the firm, suggesting that:

- (1) Psychological centers apply knowledge to the production of good and services*
- (2) Knowledge represents the most strategically valuable resource of a firm*
- (3) Individuals create and hold knowledge, not organizations*
- (4) Psychological centers exist because of the high costs involved with markets attempting to coordinate the knowledge of individual specialists*

Of note, Grant's points on why psychological centers exist mirror earlier points contained with the resource-based view of the firm and agency theory (for details on these two theories, see the discussion in my second research focus). Specifically, Grant proposes that even with cooperation, psychological centers face difficulties attempt to coordinate specialized knowledge, similar to acknowledgements later made by Davenport and Glaser (2002). Rules, sequencing, or routines can help coordinate specialize knowledge by minimizing requested costs of such activities. Coordination also depends on common knowledge shared among individuals in an organization, to include language, shared meaning, and recognition of different knowledge domains.

Three other articles within that Winter Special Issue also consider a knowledge-based theory of the firm. First, Liebeskind (2011) suggests that psychological centers have unique institutional capabilities to protect knowledge from imitation more effectively than market contracting. Second, Spender (2012) revisits socio-technical systems theory to adopt heuristics from the social constructionist literature to suggest that knowledge can be conscious, automatic, objectified, or collective. Of note, Spender suggests that a dynamic knowledge-based theory of the firm should recognize that organizations represent "activity" systems, similar to Weick and Robert's conceptualization of a collective mind as a pattern of interrelations and actions in a social system. Third, Tsoukas (1996) employs a constructionist approach to suggest that a firm's knowledge represents the indeterminate outcome of individuals attempting to manage the inevitable tensions between normative expectations, dispositions, and local contexts. Tsoukas also suggests no single individual can fully know in advance what kind of knowledge will be relevant, when, and where.

A subsequent article by Dyer and Nobeoka (2012) considers the creation and leadership of a high-performance knowledge-sharing network that:

- (1) Motivates members to participate*
- (2) Prevents free riders*
- (3) Reduces the costs associated with finding and accessing different types of valuable knowledge.*

Dyer and Nobeoka suggest strong ties between individuals in their network, alongside institutionalized routines, facilitate knowledge flows among suppliers. Further, the authors suggest that this dynamic learning capability creates a competitive advantage, both for the firm and its partners. Their research parallels several research findings discussed earlier in this review across multiple perspectives.

Finally, two books provide insightful perspectives into KML and strategy. First, Polanyi (2012) represents the initial grandfather of future work investigating KM, distinguishing the dimension of tacit knowledge prior to Nonaka's (2012) seminal article. Polanyi views tacit knowledge representing knowledge contained in the mind of an individual. In his book, Polanyi also lays the foundation for Markus' (2001) consideration of different knowledge reuse scenarios.

Second, Clippinger (2011) includes several chapters applying complex adaptive systems to business. This book makes an overarching contribution by considering that the classical view of "leadership" as a directed, focused, or activity with specific ends may not be possible as organizations confront increasingly turbulent, global environments.

From a KM perspective, it might be that "leadership" equally represents a misnomer; akin to research by Tsoukas (2012) that no single individual can fully know in advance what kind of knowledge will be relevant, when, and where. Instead, per Clippinger's suggestion, an ecosystem approach could foster knowledge exchange opportunities among individuals comprising one or more organizations and allow dynamic knowledge exchange activities to evolve. This proposal parallels similar proposals made by Galbraith (2011) and Markus *et al.* (2012). Clippinger's book presents several arguments proposing that a "bottom-up" approach as ideal for globally distributed individuals who must exchange time-sensitive knowledge to increase organizational adaptedness and survivability, whereas top-down approaches may confront indeterminacy.

March's (2011) research also considers the veracity of both organizational and individual knowledge when confronted with a turbulent external reality.

#### ***Research Questions Worth Considering:***

Having reviewed the literature above, we now suggest fourteen research questions:

- (1) What internal and external conditions facilitate knowledge creation in organizations?
- (2) Do certain organizational cultures foster knowledge creation; if so, what types?
- (3) What individual incentives effectively encourage knowledge sharing in organizations?
- (4) What properties of information systems effectively encourage knowledge reuse by other individuals in organizations?
- (5) What approaches effectively transfer knowledge across different organizational units?
- (6) To what degree does application of an information system to knowledge transfer increase knowledge transfer inter- and intra-organizationally?
- (7) What organizational strategies effectively facilitate knowledge transfer; how do these strategies align with information systems?
- (8) Does application of information systems inadvertently discourage external searches for knowledge in some instances?
- (9) What individual incentives effectively encourage knowledge application in organizations?
- (10) How do individuals develop trust in knowledge captured in an information system if they do not know the originator of the knowledge?
- (11) What factors related to the quality and usefulness of information systems also apply to the success of KM efforts?
- (12) How does increasing either the volume or depth of available knowledge affect organizational performance?
- (13) How can information systems help organizations adapt to turbulent environments, via KML; if so, what design attributes best help with such adaptations?
- (14) How can KML and information systems re-appropriate research from complex adaptive systems to inform system design, organizational design, and governance practices that foster improved knowledge transfer?

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