CHAPTER TWENTY-TWO

Trends and Issues in Integrating Knowledge Management and Organizational Learning for Workplace Performance Improvement

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The goal of the current research is to interconnect the disciplines of knowledge management (KM) and organizational learning (OL) to propose a theoretical and integrated structure of KM for performance improvement in the workplace. To this end, we adapted the concepts of learning organization (LO) and organizational learning based on the importance of the human interaction-oriented OL process, organizational supportive structure, and cultural aspects to encourage the effectiveness of KM. Such an integrative approach to learning and knowledge is critical for active utilization and application of knowledge in firms (Dalkir, 2005; Dalkir & Liebowitz, 2011).

KM has become an established but still rapidly evolving discipline due to rapid advancements in technologies. KM has been getting more attention along with the evolution of artificial intelligence and the concept of intellectual capital management in the 1990s (Bontis & Nikitopoulos, 2001). New technologies such as cloud computing and business analytics that leverage a mass amount of distributed information systems and online communities reflect the growing significance of KM for today's organizations. On theoretical, societal, and conceptual grounds, the socioeconomic trend-shift toward a knowledge society has stimulated the development of KM based on the resource-based view, which sees firms maintain

Handbook of Human Resource Development by Neal E. Chalofsky, Tonette S. Rocco, Michael Lane Morris

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

competitive advantage through their capacity to leverage knowledge assets (Darroch, 2005).

Historically, recognition of the importance of KM can be traced back to Penrose (1959), who proposed that knowledge is based on individuals' skills, experiences, and ability to absorb new knowledge. She emphasized that the role of management is encouraging the individuals' own knowledge to grow to the level of shared organizational knowledge, which becomes the basis for application of justified knowledge within the organization. According to this historical context, combining knowledge with management created the new discipline of knowledge management.

Bray (2007) stated that KM has been a major scholarly endeavor, particularly in the disciplines of information systems (IS), management, business strategies, and organizational learning. Our examination indicates that KM research by organizational researchers has four distinctive research streams: (a) conceptual and position papers clarifying the definition of (organizational) knowledge (Chiva & Alegre, 2005; Nicolini, Gherardi, & Yanow, 2003); (b) research on organizational knowledge creation (Nonaka & von Krogh, 2009), sharing (Bock, Zmud, Kim, & Lee, 2005), or transfer (Argote & Ingram, 2000); (c) KM value chain research (also called KM success factors) (Jennex & Olfman, 2005); and (d) conceptual and empirical efforts to complement KM with OL (Spender, 2008; Škerlavaj, Song, & Lee, 2010). Due to the large body or research, we have listed only key studies for these research streams.

Lately, within the KM literature, the concept of learning organization has attracted considerable attention for its role in performance improvement by stimulating interactive organizational learning processes and collaboration among people (Watkins & Marsick, 2003). Yoon and Ardichvili (2010) have pointed out that, in most organizations, KM systems and learning systems still exist as two separate entities. To explore how organizations' KM and learning systems can be best integrated, we first review the evolution and trends of KM systems, analyze the concepts of LO and OL, and then discuss administrative and design considerations for creating an integrative learning and KM system.

THEORETICAL FOUNDATION OF KNOWLEDGE MANAGEMENT

Definitions of KM and KM Systems

In defining KM, it is difficult to develop an exclusive definition of KM for one particular field (Dalkir & Liebowitz, 2011). Historically, KM has been defined as the process of applying a systematic approach for capturing, structuring, and disseminating knowledge based on the vague belief that stored

knowledge will be useful for the future (Pasternack & Viscio, 1998; Pfeffer & Sutton, 2006). This system-oriented view focused too much on the explicit knowledge and technical procedures for capturing knowledge for future utilization and neglected the importance of implicit knowledge and human-oriented collaborative interactions for creating and justifying applicable knowledge (Dalkir, 2005; Dalkir & Liebowitz, 2011).

According to this problematic issue, Klein (1998) and Stewart (1997) expanded the concept of KM to the human-oriented expertise and intellectual properties focusing on intellectual capital management for the effective application of KM. They focused on organizational learning processes among the individuals rather than building a technological system, pointing out the importance of collaborative learning activities to share experiences and expertise for creating transformative knowledge.

In this regard, Dalkir (2005) defined the goals of KM as "the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation" (p. 3). In doing so, KM needs to incorporate both the technological aspects (storing and organizing knowledge) and human-side organizational learning activities (creating justified new knowledge) in order to create intellectual assets within the organization. Such a definition helps us see similarities between research streams that examine factors affecting organizational knowledge creation and employees' knowledge sharing and transfer and organizational infrastructure that affects successful KM value chains. In addition, such a systemic view sees KM as the process of accumulating and creating knowledge for facilitating the sharing of knowledge and using gained knowledge for business strategies execution (Turban, Sharda, & Delen, 2010). Similarly, Rastogi (2000) defined KM as the "systematic and integrative process of coordinating organization-wide activities of acquiring, creating, storing, sharing, diffusing, developing, and deploying knowledge by individuals and groups in pursuit of major organizational goals" (p. 40). According to Wilson (2002), the term "knowledge" in organizational settings has been recognized as what we know through the mental processes of comprehension, understanding, and organizational learning based on continued interactions.

Widely supported definitions described above show that application of justified knowledge is the core foundation for maximizing the effectiveness of human knowledge. In other words, not only focusing on the managing process of the knowledge in terms of acquisition and storing knowledge, but also considering the leveraging and application of the knowledge, is required, which would be the foundation for the effective knowledge management system for human-oriented knowledge retention and continued knowledge leveraging in the firm.

KM systems can be described as having two different aspects: (a) the knowledge storing and capturing system and (b) the knowledge sharing, distribution, and creation processes (Raghu & Vinze, 2007). This implies that, to develop an effective KM system, an organization must build business processes and work structures that facilitate dynamic and active collaborations among people, and such interactions must be connected back to the organization's technological KM systems. Our review of the literature shows that the focus and core components of KM are comprehensive. For instance, multiple factors, including technologies, knowledge strategy, motivation/commitment, organizational culture, leadership support, work design, and strong measurements, comprise the core of KM success factors (Jennex & Olfman, 2005). As a system, KM should have a structure that supports people's processing knowledge assets and experience sharing to create justified mutual knowledge that can be applied to enhance performance in the workplace.

Evolution of KM Concepts and Theories

The evolution of KM can be chronologically classified into three phases. During the first phase (from the 1950s until the 1980s), according to the resource-based view of management (Penrose, 1959) and industrial trends toward large-scale management, more attention was given to capturing and storing technical knowledge to build a large database in the organization (Darroch, 2005). In addition, firms considered KM an effective tool for performance management and used the knowledge captured in the KM system in other areas, including total quality management and other types of performance management strategies (Hamel & Prahalad, 1994). In that period, along with the evolution of technology, the primary focus of KM research was to encourage people to use the information system (Hamel & Prahalad, 1994).

In the second phase (the 1990s), a more modern structure of KM emerged due to the introduction of the Internet and globalized industry structure to get competitive advantages through intellectual capital management (Davenport & Prusak, 2000). Furthermore, the trends of knowledge-based society and the popularity of the knowledge worker (Prusak & Matson, 2006; Rosenberg, 2006) led organizations to focus on "know-where" beyond "know-what" and even "know-how" (Davenport, DeLong, & Beers, 1998). The focus shifted to effectiveness from systematic performance management for business intelligence and process innovation. However, organizations still heavily relied on generating and managing usable knowledge assets.

Given today's highly connected and networked resource systems, creating new ideas leveraging resources and expertise in networks is the key for a firm's survival (Nonaka, Toyama, & Konno, 2000). In addition, due to the development of web-based technical tools, such as Web 2.0, mobile technologies,

and prospering online social networks, effective and innovative collaborative knowledge creation and sharing are possible to overcome the barriers of time and location. In this phase, beyond firm-driven knowledge generating and managing initiatives, the primary concern of KM systems is shaping knowledge that leverages both global and local resources. Due to the rapid increase in potential resources and users of KM systems, combined with the volatility and the shortened longevity of knowledge assets, developing an interconnected and integrated KM structure among the people, the system, and the organization is viewed as a pressing goal (Dalkir & Liebowitz, 2011; Davenport & Prusak, 2000).

Critical Themes of KM

As KM has been used in various disciplines for diverse strategies, Dalkir (2005) conducted a comprehensive literature review to identify the critical themes of the KM research and revealed three major perspectives that were considered foundational views of KM: the business and management perspective, the cognitive and knowledge science perspective, and the process and technological perspective. These three different perspectives of KM provide the basic understanding of the structure, goals, and core themes of KM.

First, from the business and management perspective of KM, performance is the primary concern based on the connection between the organization's intellectual assets and policy-related management strategies and structure (Bontis, Crossan, & Hulland, 2002). Along with the performance-oriented view, KM is considered a collaborative and integrated approach to the capture, storing, organizing, accessing, and disseminating of firms' knowledge-based assets.

Second, the perspective of cognitive and knowledge science focuses on cognitive and constructive processing, considering knowledge as the fundamental resource for intellectual functionality of the people (Dalkir, 2005). This view proposes that human knowledge is constructed and transformed into another type of manifestation based on interactions of several types of resources, such as experience, technology, traditions, culture, and social input. In addition, this constructive process of knowledge creation would result in human expertise, which would in turn encourage intelligent organizational behaviors (Wiig, 1993).

Finally, the perspective of process and technology views KM as the most effective tool by which various types of raw data and information could be turned into actionable knowledge (Dalkir, 2005; Nonaka & Konno, 1998; Nonaka, Toyama, & Byosiere, 2001). In addition, this view stresses the importance of the flow of the knowledge to the right person at the right time to maximize efficient and effective uses of the knowledge. Furthermore, this perspective recognized the importance of leveraging knowledge from the individual toward organizational knowledge through collaborative human interactions.

KNOWLEDGE MANAGEMENT TOOLS AND TECHNOLOGICAL SYSTEMS

In this era of information overflow and overload, one of the key organizational competencies for success is the ability to create and manage knowledge in efficient and effective ways. In order to achieve this purpose, securing and maintaining dependable KM tools and utilizing appropriate technological systems for effective KM becomes a critical task. In this section, we will review different types of technological systems, tools, and case studies of KM utilized in various types of organizations.

Technological Systems for KM

In achieving efficient management of individual- and organizational-level knowledge assets, several types of technological systems have been adapted to develop KM systems. Those are case-based reasoning systems, group decision support systems, artificial neural networks, semantic search engines, social network analysis, and online communities of practice (Ghani, 2009; Rao, 2004). First, *case-based reasoning systems* are commonly used to make business decisions based on a case-filtering method that selects similar cases from a case library database and presents a best case through its reasoning process. In the case library, each case contains the required components, such as information about the underlying competitive situation, environmental conditions, management priorities, experiences, values, and moments of learning (Ghani, 2009).

The second type of technology is the *group decision support system*, which allows members of organizations to share and exchange ideas and opinions so they can immediately use shared information for decision making. One of the key benefits of this system is creating an individual and group learning environment during the group decision-making process in which each individual's success and failure experiences are used (Ghani, 2009). *Artificial neural networks*, the third type of technological system, borrows concepts from artificial intelligence and resembles a simulation of the function of the human brain in order to create meaningful patterns and structures of tacit knowledge for effective decision making (Ghani, 2009). *Semantic search engines* generate a semantic network of keywords through scanning existing text-based data in an organization. In the end, users can create a semantic table composed of semantic queries and linking to be used in decision-making tasks (Ghani, 2009). *Social network analysis* focuses on identifying engagement patterns of organizational members, mapping knowledge flow, and identifying key personnel for human resource decisions. Qualitative data (e.g., survey and

interview data) and quantitative data (e.g., analysis of emails, phone calls, work documents, etc.) are used for social network analysis. The results of the analysis can be used in process redesign, role development, and collaboration between organizational members (Rao, 2004). *Online communities of practice* are virtual communities composed of various members of an organization with similar interest in certain subject matter. The main purpose of the online communities of practice is to establish a virtual community focused on task-oriented, collective problem-solving practices (Rao, 2004).

KM Tools

Although there have been numerous types of KM tools adopted in various workplace organizations, their main functions can be classified into five categories: content management tools, knowledge taxonomies, groupware, enterprise portals, and innovation management tools (Rao, 2004). Definitions of the five categories are illustrated here.

- *Content management tools*—allow users to author, edit, and manage new knowledge and learning content. Often, some content management tools provide collaborative features to create content among several users synchronously and asynchronously.
- *Knowledge taxonomies*—used as useful tools to find relevant information, knowledge, or people in time through built-in computer-generated taxonomies used in an organization.
- *Groupware*—a virtual tool for communication, collaboration, polling, group document creation, rating, and access management.
- *Enterprise portals*—virtual places for interaction, communication, collaboration, transaction, and information management that create an on-demand workplace for individual employees. Across different departments of an organization, horizontal functions of enterprise portals, such as business intelligence, collaboration, communities, and e-learning, can be utilized. Key criteria to select quality enterprise portals are scalability, security, customizability, navigability, and accessibility (Collins, 2004).
- *Innovation management tool*—a centralized idea management system to help organizational members access experts, search for past innovations, and improve their innovative practices for workplace performance.

Compared to Rao's classification of KM tools, Ardichvili's (2002) KM technologies list similar tools, such as groupware, document management, enterprise resource planning, virtual community collaboration, data warehousing, business intelligence systems, and automatic tools for generating new knowledge.

When users of KM tools select and deploy a KM tool for their organization, it is advised to consider whether the selected tool (a) facilitates information contextualization, (b) intelligently transfers information, (c) facilitates social interactions and networking, and (d) presents a customized human-computer interface for efficient interaction with KM systems (Ghani, 2009).

LEARNING ORGANIZATION AND ORGANIZATIONAL LEARNING

For our purposes of integrating organizations' knowledge and learning systems, it is appropriate to postulate knowledge as the product or object of learning to be facilitated, utilized, or protected. Therefore, we adopted the concept of learning organization as the structural and cultural system in which continued organizational learning occurs, not only for collaborative knowledge creation but also for capturing, sharing, and promoting knowledge through utilizing human and sociotechnical systems in the firm (Watkins & Marsick, 2003). In the following sections, we review major conceptualizations of LO and OL, followed by an examination of how measures of LO or OL have been related to KM research and what relationships were found between constructs of LO/OL and KM.

Learning Organization

When compared to the concept of KM, learning organization focuses more on people's interactions for creating new knowledge through their collaborative learning process, whereas KM puts a greater emphasis on the creation and use of technological and managerial systems. LO literature emphasizes that effective and continuous learning processes must take place at all three levels: individual, team, and organization (Edmondson & Moingeon, 1998; Watkins & Marsick, 2003).

From the organizational structure and climate standpoint, Marsick and Watkins (2003) conceptualized LO as consisting of two dimensions: people and structure. They identified (a) continuous learning, (b) inquiry and dialogue, (c) collaboration and team learning, (d) people empowerment as core components of the people level, (e) environmental connection, (f) embedded systems, and (g) strategic leadership for the structure level.

In comparison, from the systems theory perspective (i.e., focusing on the synergy of component interactions), Senge (1990) identified personal mastery, mental models, shared vision, team learning, and system thinking as core components of the LO. In this perspective, team-based learning promotes continuous expansion of employees' competency through system

thinking and sharing of visions for organizational long-term success. Taking a viable and adaptive system model, Jensen (2005) defined the LO as "an organization that is organized to scan for information in its environment, by itself creating information, and promoting individuals to transform information into knowledge and coordinate this knowledge between the individuals so that new insight is obtained" (p. 61). Extending the line of discussion from Senge's work to practical managerial and organizational concerns, Garvin, Edmondson, and Gino (2008) proposed three building blocks of LO: a supportive learning environment, concrete learning processes and practices, and leadership behaviors that reinforce learning.

Organizational Learning

The concept of organizational learning has a strong focus on the process perspective as "the process an organization uses to become a learning organization" (McLean, 2006, p. 256). In the early stage of conceptualization, Argyris and Schön (1978) defined it as the process of detecting and correcting errors between organizational decisions and environmental demands. There have been numerous conceptualizations of organization learning through the 1980s and 1990s, and the most fundamental notion was that organizational learning, which is the process of developing and sharing new knowledge and insights organization-wide (e.g., Levinthal & March, 1993; Stata, 1989), focused mostly on employees' behavioral changes (Spender, 2008).

Through organizational learning, individuals, teams or subgroups (which includes communities), and the organization itself acquire organizational knowledge, which is the intellectual capital for defining and improving organizational performance (Bontis, Crossan, & Hulland, 2002; Cummings & Worley, 2008). The common perspective among various views of organization learning is that it transforms individual-level knowledge obtained from learning and work experiences to collective knowledge, the ultimate outcome of organizational learning (Crossan, Lane, & White, 1999).

Bontis , Crossan, and Hulland (2002) identified three levels of learning and their interactions as crucial for effective organizational learning: individual-level learning (individual competence, capability, and motivation), group-level learning (group dynamics and the development of shared understanding), and organization-level learning (alignment between learning with systems, structures, strategy, procedures, and culture). Crossan, Lane, and White (1999) claimed that individual members intuitively recognize tacit knowledge and expertise and establish a mental cognitive map by interpreting environments. Bontis, Crossan, and Hulland (2002) said that this individual knowledge becomes group-level learning through continuous dialogue and establishment of shared understanding, and it becomes institutionalized through the

organization's embedding of group-level norms and practices into organizational structure, processes, and culture. Such processes are very similar to the knowledge creation and conversion processes proposed by Nonaka and his colleagues (Nonaka, Toyama, & Byosiere, 2001; Nonaka, Toyama, & Konno, 2000). One common goal of organizational learning is to clarify and measure intuition, interpretation, integration, and institutionalization (Škerlavaj, Song, & Lee, 2010).

Empirical Research Including or Aligning LO/OL and KM

Despite a large body of empirical research on KM, particularly in areas of organizational knowledge creation, employees' KM system adoption, knowledge sharing, and knowledge transfer, studies that explicitly examine the relationship between learning organization (LO), organizational learning (OL), and knowledge management (KM) are scarce. We believe that this research gap exists because few scholars of KM have included constructs of LO or OL in their research designs. The opposite picture also applies to research on LO or OL. Each concept of LO, OL, and KM has been focusing more on which factors in organizational contexts influence the success of the adopted concept and how the adopted concept influences organizational outcomes. Our own work on the validation of organizational knowledge creation (Song, Uhm, & Yoon, 2011; Song, Yoon, & Yoon, 2011) and the influence of LO on various employee behaviors confirms the lack of empirical linkage between LO/OL and KM.

On a positive note, the number of empirical studies that illuminate positive and complementary relationships between LO/OL and KM is increasing. For instance, Jo and Joo's (2011) study found that LO made both a direct and indirect impact on employees' knowledge sharing intention. Its indirect impact followed paths of employees' organizational commitment and organizational citizenship behavior, which in turn influenced employees' knowledge sharing intention. Song and Kolb (2009) also found that LO accounted for about two-thirds of the variability for each of the four organizational knowledge creation and conversion components: socialization, externalization, combination, and internalization. Another study conducted in Taiwan also supported the positive influence of LO on customer knowledge management and firm performance (Shieh, 2011). Chen and Chen (2010) explored the relationship between OL and KM, and their correlational research reported moderate levels of positive associations between OL (captured by learning commitment, sharing of prospects, and open-mindedness) and KM (consisting of knowledge acquisition, creation, diffusion, and accumulation). These findings support the potential efficacy of LO or OL as antecedents of KM, especially when knowledge (creation, sharing, or transfer) is perceived as the object of LO or OL.

CONSIDERATIONS FOR AN INTEGRATED APPROACH OF KNOWLEDGE MANAGEMENT AND ORGANIZATIONAL LEARNING

In considering the possibility of an integrated approach of KM and OL, reviewing various views about the similarities and differences of KM and OL is an important first step to take. In addition, from a practical perspective, acknowledging technical considerations during the integration decision process is another step to follow. From our review of the literature on KM and OL, we believe the integrated approach should include the following components and conditions: (a) learning organization as the supportive organizational culture to integrate KM and OL, (b) organizational structure, leadership, and strategies conducive to KM and OL integration, and (c) the technological support system and tools enabling the integration and deployment process.

As Figure 22.1 indicates, the integrated approach of KM and OL comprises three major supportive components and one environmental condition (LO culture). In the center of the three major components, we place the integrated process of KM and OL. In specifying the integrated process here, it is important to understand the concept of the knowledge and learning content spectra. For knowledge, Gamble and Blackwell (2001) illustrated a spectrum of knowledge between tacit and explicit states through the four transitional phases (incapable of codification, capable of codification, capable of communication, and capable of prediction). They also explained different types of knowledge (static, dynamic, declarative, procedure, abstract, and concrete) based on how

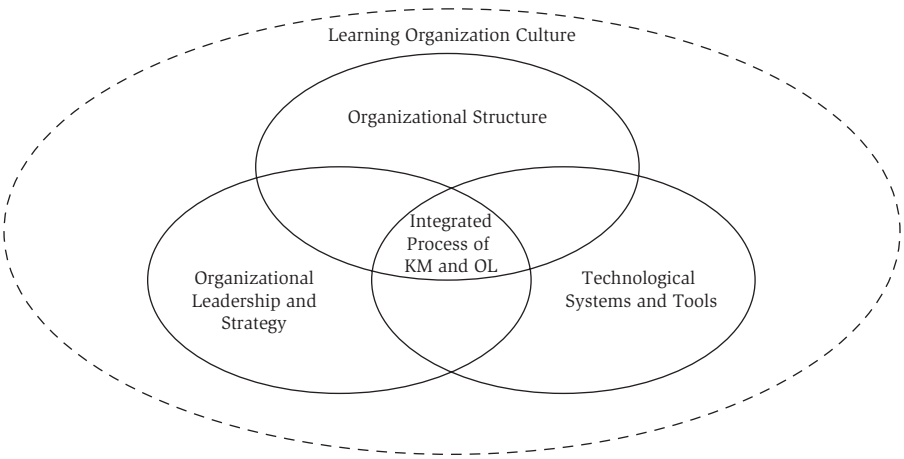

Figure 22.1 Main Components of the Integrated Approach of KM and OL

we use the knowledge. In a broader scope, Jovanović, Gašević, Verbert, and Duval (2005) explained a spectrum of learning content ranging from content assets (text, audio, video, animation, illustration, etc.), information and knowledge objects (concepts, principles, procedures, etc.), learning objects (learning objectives, content, practice, assessment items), learning components (job aids, instructional program), to learning environment (curriculum and learning communities). In a combined view of both the knowledge and learning content spectra, we can find different sections of the spectrum that KM or OL can handle, respectively. For example, content assets, information objects, and certain limited types of learning objects (e.g., simple how-to manuals or instructions) can be managed through the KM process, whereas global learning objects and learning components can be managed through the OL process.

As we try to combine the conceptual and practical aspect of KM and OL through the lens of the knowledge and learning content spectra, the enabler of this process is utilizing an integrated technological system that merges KM systems, tools, and learning content management systems. In essence, the integrated technological system for KM and OL should be able to address performance needs of organizational members in a just-in-time manner. In responding to this need, we propose the knowledge and learning deployment process shown in Figure 22.2.

The knowledge and learning deployment process illustrates a performance support process that a centralized but customizable delivery portal (based on user need) can be accessed anytime and anywhere when an employee or group of employees needs to address job- and task-related issues through existing knowledge, learning objects, or learning components. At the same time, organization members can use the centralized portal to create and accumulate new knowledge, learning objects, learning components, and curriculum anytime and anywhere.

It is claimed that KM initiatives are not as easy and successful as anticipated. Furthermore, OL methods are criticized as being over-hyped or sometimes

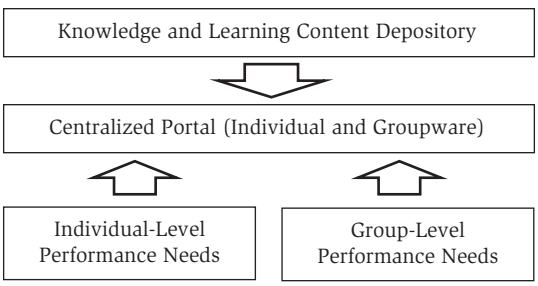

Figure 22.2 Integrated Technological System for Knowledge and Learning Deployment

under-performing in terms of actual application of knowledge by the employees. A rationale for integrating KM and OL is that both fields have a similar focus in enhancing human knowledge and performance. It is believed that our proposed approach of integrating KM systems, tools, and OL methods will greatly serve to address various kinds of performance issues and problems encountered by many employees and groups who strive for competitive capabilities and positions in the ever-changing world of business.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Our proposed conceptual frameworks shown in Figures 22.1 and 22.2 can help the researcher determine appropriate nomological relationships among variables when the constructs of LO, OL, and KM are examined for targeted workplace performance improvement. Identifying targeted performance goals (the two rectangles in Figure 22.2) can be the first step. In collaboration with the clients, the researcher(s) can clarify the measurement or description of desired performance indicators and which behaviors and state-like attitudes are amenable to modification through a new program, design, or system can be identified. Whether appropriate knowledge assets and learning paths exist for identified performance needs can be examined at this step as well. Although this initial step is hard to operationalize, the ultimate goal of LO, OL, and KM is to positively influence employees' organizational behaviors and improve business performance. Our review of empirical research linking KM with learning or vice versa shows that such efforts will be more fruitful if proximal and distal individual, job, social and relational, and organizational constructs are examined together to see how they affect or are mediated by employee behaviors (Jo & Joo, 2011) or business performance (Škerlavaj, Song, & Lee, 2010)

KM research has been strong in examining areas that can be associated with each of those three circles on Figure 22.1: organizational structure (e.g., job complexity, design, resource availability, etc.), leadership and strategy, and technologies. If the integration of KM and OL are to be examined for qualitative and quantitative characteristics, based on support from both conceptual and empirical research findings, then LO can be situated as an overarching environment and antecedent to the creation of a new integrative system, and structural relationships among proposed circles can be examined. We acknowledge that each concept represented as an elliptical circle in Figure 22.1 can have many sub-constructs, such as job design, resource availability, and perceived organizational support under the organizational structure; therefore, we like to note that the use of both figures will be most useful if researchers can establish essential variables or themes by first examining which learning and

performance needs exist (from Figure 22.1), then positioning structural determinants of learning organization culture, leadership/strategy, organizational structure, and technologies. Answers to pressing but important questions, such as which factors affect the integration of KM and OL or what the impact of an integrative KM/OL system on workplace performance is, will require examining interactions among individual, job, social/relational, and organizational characteristics that are closely aligned with targeted performance needs.

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