



Knowledge Management

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Knowledge Management: Implications for Human Service Organizations

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SUMMARY. Knowledge management has recently taken a more prominent role in the management of organizations as worker knowledge and intellectual capital are recognized as critical to organizational success. This analysis explores the literature of knowledge management including the individual level of tacit and explicit knowledge, the networks and social interactions utilized by workers to create and share new knowledge, and the multiple organizational and managerial factors associated with effective knowledge management systems. Based on the role of organizational culture, structure, leadership, and reward systems, six strategies are identified to assist human service organizations with implementing new knowledge management systems. doi:10.1300/J394v05n01_13 [Article copies available for a fee from *The Haworth Document Delivery Service*: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website:

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INTRODUCTION

The focus of evidence-based practice is on the practitioner's use of evidence to meet the service needs of clients. The focus of client information and practitioner knowledge is on the organization and how well it manages information and knowledge. Organizations have come to realize that their greatest asset is the knowledge of their workers. Knowledge and intellectual capital represent the wealth of an organization, especially human service organizations. The term "knowledge management" first appeared in the literature of the for-profit sector in the early 1980s in an effort to capture the resources buried in their workforce and research community. This development prompted researchers to examine the knowledge that exists within businesses and understand how that knowledge is used (Hansen, Nohria, and Tierney, 1999). Consulting companies whose main business is collecting, organizing, managing, and disseminating knowledge were pioneers in knowledge management as they sought to identify systems and structures, mainly databases and repositories, to codify and store knowledge for easy access.

In defining knowledge management, Davenport and Prusak (2000) distinguish between the terms "knowledge," "information," and "data." Often times used interchangeable, their definition helps to promote a clear understanding of knowledge management. Data is defined as "unorganized facts," discrete findings that carry no judgement or interpretation. In contrast, information is "data plus context" where data have been organized, patterned, grouped, or categorized. And finally, knowledge is "information plus judgment," a richer and more meaningful perspective derived from experience and the analysis of the data and information. As research on knowledge management progressed, it became clear that knowledge management involved more than information management or information technology. It included linking individuals to each other through systems and structures that helped organizations to recognize, create, transform, and distribute knowledge

among all workers (Gold, Malhotra, Segars, 2001). The focus shifted from information technology (managing data and information) to increasing one's understanding of the interactional process of creating and sharing knowledge within organizations (Nonaka, 1994).

In an extensive review of the definitions of knowledge management, Awad and Ghaziri (2004) found the following six common components used to define knowledge management that build upon a foundation of information management: (1) using accessible knowledge from outside (and inside) sources, (2) embedding and storing knowledge, (3) representing knowledge in databases and documents, (4) promoting knowledge growth in the organizational culture, (5) transferring and sharing knowledge throughout the organization, and (6) assessing the value of knowledge assets and impact. Within this working definition of knowledge management, this analysis focuses on all components of knowledge management except information storing and documenting.

While the majority of experience with knowledge management resides in the for-profit sector, recent interest in the public and nonprofit sectors has emerged in relationship to improving service effectiveness and efficiency as well as reducing costs (Haynes, 2005; Edge, 2005; Syed-Ikhsan & Rowland, 2004; McAdam and Reid, 2000; Office of Security Defense, 2002). While focused mainly on information technology, the federal government has several knowledge management projects, including the Federal Knowledge Management Working Group, which seeks to understand knowledge management at the federal level of government. In addition to the benefits of knowledge management in the public sector, there are multiple challenges including: (1) the little support and flexibility in financial reward systems (Office of Security Defense, 2002), (2) isolated nature of public sector work (Murray, 2001), (3) the culture of resistance and hoarding of knowledge (Svieby and Simons, 2002; Murray, 2001, Liebowitz and Chen, 2003), (4) the difficulty in developing and maintaining collaborative cultures (Edge, 2004), and (5) the reduction of centrally allocated resources for managing knowledge (McAdam and Reid, 2000). The limited amount of research on knowledge management in the public sector suggests that implementation strategies need more attention in order to move beyond anecdotal reporting (Edge, 2004). Despite what little we know about knowledge management in the public sector, even less is known about knowledge management in the human services sector.

The process of knowledge management can be viewed from three perspectives: individual, group, and organizational. The individual level includes an understanding of tacit and explicit knowledge and

constitutes the first part of this analysis. As individuals create information and acquire knowledge, it needs to be shared through social interactions and exchanges within the organization in order to create new knowledge. Knowledge sharing is addressed in the second section of this analysis. The process of creating and sharing knowledge depends not only on the individual and team level sharing but also on an understanding of the many organizational factors noted in the next sections that underlie the successful implementation of a knowledge management system. And finally, this analysis concludes with a discussion of the implications for implementing knowledge management systems in human services organizations.

THE ROLE OF TACIT AND EXPLICIT KNOWLEDGE IN ORGANIZATIONAL LIFE

It is no longer sufficient to simply employ people who can do the job; we need to understand how they do it as well as the processes that underlie their work (Horvath, 2001; Stenmark, 2000; Tagger, 2005). Intellectual capital is the sum of the knowledge possessed by the employees of an organization. Managing knowledge is the key to maximizing productivity and promoting organizational sustainability (Grossman, 2006).

Horvath (2001) defines knowledge as the recognition that people add value to information by combining it with other information to form new and unique combinations; they refine information for specific uses or generalize it for broader application. Also, people evaluate information for its usefulness and occasionally reframe information to yield new insights. In essence, organizational members provide context, meaning, and purpose to information and move it along a continuum toward what we commonly call knowledge. Therefore, knowledge is defined by Horvath (2001) as *information with significant human value added*. In addition, knowledge is dynamic, created in social interactions amongst individuals and organizations, and depends on particular time and space (Nonaka, 1994). As a result, information becomes knowledge when it is interpreted by individuals, given a context and anchored in the beliefs and commitments of individuals.

According to Augier and Vendelo (1999), knowledge can be viewed in terms of a continuum with tacit knowledge on one end and explicit, or codified, knowledge on the other. The concept of “tacit knowledge” was first defined by Polanyi, although the idea that certain thoughts and

knowledge are contained in areas that are inaccessible to a conscious process goes back to at least as far as Helmholtz's work in the 19th century (Nonaka, 1994; Tagger, 2005).

Tacit knowledge is knowledge that exists in the minds of workforce members, manifests itself through their actions, and is not easily articulated. Tacit knowledge can be displayed by experts who make judgments and take actions, usually without making direct reference to a framework that explains what they are doing. Therefore, tacit knowledge is a meaningful and important source of information that influences the decisions and actions of practitioners, often called "know how" (Brown & Duguid, 2001 and Zeira & Rosen, 2000). In contrast, explicit knowledge refers to knowledge that has been captured and codified into manuals, procedures and rules that can be disseminated. It may refer to knowledge that has been learned through explicit instruction or to a skill acquired through practice. While knowledge may be needed to acquire skills, it may no longer be needed once a person becomes adept in exercising them (Brown & Duguid, 2001).

When explicit knowledge is embodied in a language that can be communicated, processed, transmitted and stored, it takes the form of data-based information and evidence-based principles in organizational manuals. In contrast, tacit knowledge is personal and difficult to formalize because it is embedded in action, procedures, commitment, values and emotions and acquired by sharing experiences and observations that are not easily communicated (Nonaka, 1994).

As a result, tacit and explicit knowledge are interdependent, essential to knowledge creation and of equal importance (Nonaka, 1994). Explicit knowledge without tacit insights quickly loses its meaning; where "know that" requires "know how." Therefore, knowledge is at least two dimensional and created through interactions between tacit and explicit knowledge. Agency-based practice represents the integration and dissemination of both tacit and explicit knowledge (Brown & Duguid, 2001; Madhavan & Grover, 1998).

Extracting Tacit Knowledge

An interesting aspect of tacit knowledge is the inherent tension between its value and its elusiveness. Its high value stems from knowing things we are unable to express; for example, "*We can know more than we can tell*" (Polanyi, 1998, as cited in Nonaka 1994, p.16) and "*We can often know more than we realized*" (Leonard and Sensiper, 1998, p. 114). This realization becomes significant when knowledgeable and

skillful people leave an organization. They take with them not only a substantial amount of organization-specific knowledge and information but also tacit knowledge that they acquired on the job and may not have transferred to others (Tagger, 2005). Therefore, one of the goals of identifying tacit knowledge is to capture its contributions to organizational effectiveness, especially before experienced personnel leave the organization.

Horvath (2001) identifies the following reasons to capture and manage tacit knowledge: (a) the need to promote the transfer of best or most promising practices, especially related to how work actually gets done; (b) the need to define core competencies, especially the unique value-added skills that individuals derived from particular situations, experiences and organizational history; and (c) the need to document innovative processes by which organizational problems are defined and solutions developed. The essence of an organization's learning capabilities is often found in the tacit knowledge of its employees because much of the crucial *know how* resides in the minds of the organization's members (Madhavan & Grover, 1998 and Nonaka, 1994).

While some tacit knowledge can never be articulated, it is important to note the two different kinds of tacit knowledge identified by Nonaka (1994): *technical tacit knowledge* that is embodied in skills and can therefore be copied ("know how"), and *cognitive tacit knowledge* that is ingrained in mental models that are taken for granted and can not be easily demonstrated and transferred. Based on the distinction between technical and cognitive, two major definitions of tacit knowledge have emerged: (1) "tacit knowledge is non-codified, disembodied know-how that is acquired via the informal take-up of learned behavior and procedures" (Howells 1996, p. 92); and (2) "tacit knowledge is manifest only in its application and is not amenable to transfer" (Grant 1997, as cited in Seidler-de Alwis & Hartmann, 2004 p. 375). With this distinction in mind, there is likely to be a knowledge hierarchy where a large proportion of our present day explicit knowledge has originally arisen from embedded tacit knowledge that has slowly become codified or articulated over time (Bush and Richards, 2001). In some professions, this development is referred to as "practice wisdom."

The growing interest in tacit knowledge over the last decade has also informed the process of organizational learning (Swarts & Pye, 2002); especially the different ways in which tacit knowledge affects the sharing of knowledge. While much of the literature and research surrounding knowledge management has emphasized the definition and justification for knowledge management, little has been written about

knowledge sharing, especially the transfer of tacit knowledge from one individual to another. Because tacit knowledge is gained through experience and revealed through application, it is important for organizations to create opportunities for the sharing of tacit knowledge (Grant, 1996). Thus, the goal of knowledge management is to capture tacit knowledge and encourage workers to share and communicate their knowledge with others at various levels within the organization by using formal and informal networks and creating a culture in which knowledge sharing is supported and encouraged (Awad and Ghaziri, 2004). The urgency of this sharing process can be seen in an organization's leadership succession planning where senior staff members may leave the organization with knowledge management mechanisms in place for transferring their tacit knowledge to their successors.

KNOWLEDGE SHARING IN ORGANIZATIONS

Within an organization, knowledge sharing can occur at three distinct levels: organizational, group, and individual (De Long and Fahey, 2000). While individuals are the primary conduits through which knowledge is created and shared in an organization, organizations cannot create knowledge without the individuals who possess the knowledge and this knowledge creation needs to be harvested by organizations in order to enhance effectiveness and efficiency (Grant, 1996; Ipe, 2003; Nonaka and Takeuchi, 1995). Thus, individuals play a critical role in the process of organizational knowledge creation because they provide the knowledge that can be included, augmented, and implemented as a part of the organization's knowledge base.

Knowledge sharing relies heavily on the interactions between individuals within an organization. Ipe (2003) states, "An organization's ability to effectively leverage its knowledge is highly dependent on its people, who actually create, share, and use the knowledge" (p. 341). The sharing of knowledge is a process by which individuals are able to convert their own knowledge into a form that can be understood, absorbed, and used by others. Knowledge sharing allows individuals to learn from one another as well as contribute to the organization's knowledge base (Hendricks, 1999; Cohen and Levinthal, 1990). Knowledge sharing also promotes creativity and innovation as individuals collaborate together, circulate new ideas and contribute to innovation and creativity in organizations. This is the essence of a learning organization.

The goal of a learning organization, then, is to integrate the specialized knowledge of individuals through the following organizational mechanisms: (1) rules and directives; (2) sequencing; (3) routines; and (4) group problem solving and decision making (Grant, 1996). The rules and directives include standards that guide procedures and processes as well as “provide a means by which tacit knowledge can be converted into readily comprehensible explicit knowledge” (Grant, 1996, p. 115). Sequencing refers to the organizational activities needed to gather the input of specialists over time in order to convey knowledge while minimizing the need for communication and coordination. Routines are sets of behavior that “support complex patterns of interactions between individuals in the absence of rules, directives, or even significant verbal communication” (Grant, 1996, p. 115). Routines are used in an organization to provide consistent and task specific performance outcomes. These three mechanisms (rules, sequencing, and routines) need to be balanced with the fourth related to face-to-face meetings or group collaboration. Because group problem solving and decision making require considerable time and resources when trying to communicate tacit knowledge, they are usually reserved for more complex situations (Galbraith, 1973; Perrow, 1967).

Organizational knowledge needs to be viewed as a communal resource whereby communities of practice inside and outside of organizations have a mutual interest in knowledge sharing that involves the following factors: opportunity structures, care, and authenticity (von Krogh, 2002). Opportunity structures are the occasion and benefits of knowledge sharing in the community; for example, narrow opportunity structures involve communicating very specific knowledge through very specific channels with a limited number of people and broad opportunity structures include many relationships in the community with a wide spectrum of interests and knowledge where sharing occurs on a consistent basis through both virtual and physical means (e.g., “knowledge fairs”).

The second factor relates to caring as a social norm that includes: (1) trust, (2) tolerance, (3) active empathy, (4) concrete assistance, and (5) authenticity. The more members are able to trust each other and tolerate the differences inherent in each other’s knowledge, experience, and behavior, the more likely they will be to share knowledge and cultivate varied interests that can contribute to positive learning in the community. Active empathy is a proactive approach to understanding the knowledge of others and encourages members to share their knowledge. Tangible help reflected in concrete assistance promotes sharing as

members offer knowledge based on their own experiences and thereby promote shared learning. And finally, authenticity refers to sharing knowledge “directly from the source in a way that ensures its genuineness, accuracy, validity, and reliability” (von Krogh, 2002, p. 383). The use of knowledge also contributes its authenticity, thereby advancing the knowledge sharing process and furthering its dissemination. In addition, knowledge sharing is enhanced by other social norms in the organization related to incentives to share and the type of knowledge to be shared (Ipe, 2003).

The nature of knowledge includes its value to the individual as well as to the organization (von Hippel, 1994; Weiss, 1999). Knowledge, when viewed as a commodity, creates a sense of ownership among those who possess it. This sense of ownership stems from the associations between knowledge, status, and career advancement opportunities (Andrews & Delahaye, 2000). When the possession of knowledge leads to competition, incentives must be created to encourage members of an organization to participate in knowledge-sharing activities. Incentives to share knowledge can be separated into *internal* factors (e.g., value of knowledge and benefits received from sharing it) and *external* factors (e.g., the relationship with the recipient and the rewards for sharing). Individuals possessing knowledge are highly valued and viewed as powerful and can use knowledge to achieve their desired outcomes that can decrease the incentive to share knowledge among other staff. The mutual benefits of knowledge sharing between individuals, or reciprocity, is also a motivational factor. Reciprocity as a motivation to share knowledge indicates an open relationship between individuals who expect that their contribution to the exchange of knowledge will be mutually beneficial (Ipe, 2003). Reciprocity can also be viewed as a serious threat to knowledge sharing when it arouses a fear of exploitation, a situation where individuals perceive themselves as offering too much knowledge and receiving little benefit in return.

The relationship between sender of knowledge and the recipient of knowledge is an external factor that can impact motivations to share knowledge (Andrews and Delahaye, 2000). For example, the power differential between senders and recipients can influence whether and how knowledge is shared. Huber (1991) found that individuals with lower status are more inclined to share information with those who hold more power within the organization, while those with more power tend to share knowledge amongst colleagues who have similar power statuses.

Rewards are another external factor related to incentive structures. The more benefits (perceived or realized) that individuals receive from

sharing knowledge, the more likely they will share and vice versa. When individuals perceive knowledge sharing as being detrimental to their value or status, they are less likely to share. Bartol and Srivastava (2002) identified four mechanisms of knowledge sharing: (1) individual contribution, (2) formal interactions within and between groups, (3) sharing across groups, and (4) sharing through informal means. The first three mechanisms could involve extrinsic promotional opportunities as incentives to foster knowledge sharing, while the reward for the fourth mechanism would be the intrinsic value of increasing one's expertise and the development of new skills.

Opportunities for knowledge sharing can occur both formally and informally. Formal opportunities include occasions that are specifically intended to obtain, exchange, and disseminate information (e.g., symposiums, conferences, and training events that provide a structured means to share primarily explicit knowledge in an efficient manner to a large number of individuals). Informal opportunities are personal interactions with individuals within and between social networks. Knowledge is most likely exchanged through these channels because of interpersonal relationships that encourage trust and build rapport (Ipe, 2003).

ORGANIZATIONAL FACILITATORS OF KNOWLEDGE MANAGEMENT

As managers understand the difference between tacit and explicit knowledge and the structures needed to promote knowledge sharing, they position themselves to identify ways to incorporate knowledge management into the fabric of their organization. Therefore, it is important to identify the organizational factors (structure, leadership, education and awareness) that facilitate knowledge sharing (Riege, 2005; Syed-Ikhsan, 2004, Van Beveren, 2003; Taylor & Wright, 2004). Organization culture is often viewed as the most important influence in determining the success or failure of knowledge management (McDermott & O'Dell, 2001, Mason & Pauleen, 2003, Riege, 2005). While many factors may contribute to the successful implementation of knowledge management, the most important first step is the establishment of a clear connection between the knowledge management strategy and the overall goals of the organization (Riege, 2005).

Organizational Culture

While organizational culture can contribute to promoting successful knowledge management strategies (Dyer, Nobeoka, 2000) it can also be a barrier (Chua & Lam, 2005). In a study of middle managers perceptions of knowledge management, 45% identified organizational culture as the greatest barrier to knowledge management, pointing to lack of trust, communication, and individual sharing as detrimental to successful knowledge management implementation (Mason & Pauleen, 2003). In another survey of large and small companies, an organization's main implementation challenge stemmed from the absence of a "sharing" culture (Chief Information Officer Council, n/d). The creation of an open, innovative, and supportive climate, where ideas are welcome and people are engaged in improving the work environment is essential for successful knowledge sharing and management. Effective knowledge sharing involves learning from mistakes as well as creating space to share, reflect, and generate new knowledge (Taylor & Wright, 2004; Riege, 2005).

The unique demands placed on human service organizations can erode the willingness of staff to reflect on and learn from mistakes (Taylor & Wright, 2004). Trust within an organization is crucial to encouraging knowledge sharing. Staff need to feel free to share insights, experiences, and know-how in order to promote the sharing of knowledge. Trust is an essential part of the knowledge management process by "giving clear impressions that reciprocity, free exchange, and proposing innovations will be recognized and fairly compensated. In contrast, lack of trust encourages employees at all levels to hoard knowledge and build suspicion in people and organizational processes" (Awad & Ghaziri, p. 25)

Drawing upon Schein's (1985) concepts of organizational culture, there are several aspects of culture that can inhibit or facilitate knowledge sharing. A "visible" culture includes all the espoused values, philosophy, and mission that are reflected in the structure, stories, and written statements about the organization while the "invisible" culture is the deeper level of unspoken values and beliefs that guide staff. Organizations that are able to connect the visible and invisible dimensions of their organizational culture to the knowledge sharing process are more likely to succeed. McDermott and O'Dell (2001) suggest that organizations do not need to change their organizational culture prior to introducing knowledge management; rather managers need to understand the invisible and visible dimensions of the organizational culture and

build a framework for knowledge management within their existing culture. The process for making this connection between the dimensions of culture and knowledge sharing includes: (1) linking knowledge sharing to practical problem-solving, (2) introducing knowledge management in a way that matches the organization's style, and (3) developing a reward system that support knowledge sharing. The invisible dimensions involve a process of linking the notion of knowledge sharing to a existing core values as well as existing organizational networks.

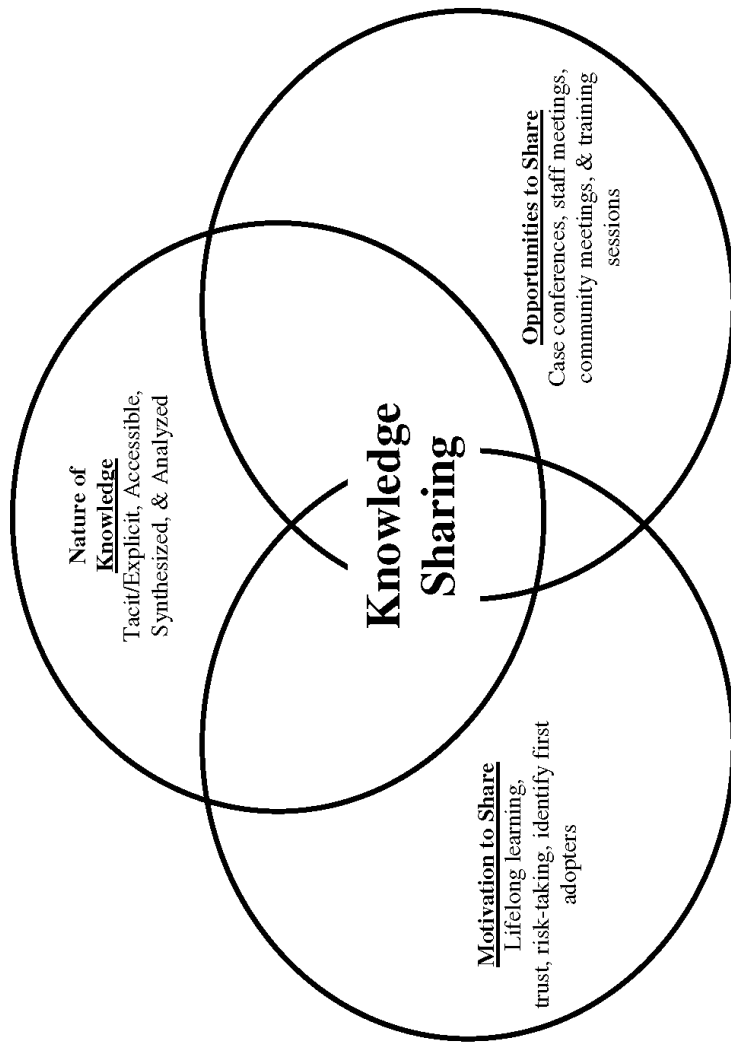
Ipe (2003) describes another example of how organizational culture influences knowledge sharing and knowledge management by illustrating this overlapping aspect of the nature of knowledge, opportunities structures, and motivations noted in Figure 1. The organizational culture allows for the three elements to interact in a non-linear fashion and allows for the sharing of knowledge within an organization. Ipe argues that an organizational culture that is not supportive of any of the three essential elements will prohibit effective knowledge sharing.

Organizational Structure

There is much discussion in the literature on knowledge management about the benefits and limitations of different organizational structures for knowledge management (van Beveren, 2003; Riege, 2005; Nonaka and Takeuchi, 1995). Some studies suggest that an open and flexible organizational structure promotes information sharing better than the hierarchical, bureaucratic structures (Probst, Raub, & Rombhardt, 2000). Most bureaucratic organizations are often characterized by an upward flow of information (with processing and filtering occurring at each level) and a reluctance to share information downwards or outwards because of a belief that employees do not need the information for improved performance (van Beveren, 2003). In addition, hierarchical organizations tend to have detailed rules and procedures that support the punishment of mistakes and failures and thereby constrain knowledge sharing practices. In contrast, communication flow in relatively flat organizations is not restricted to one-direction, but rather is centered around small functional areas or project teams (Ives, Torrey, & Gordon, 2000).

Most public sector human service organizations reflect strong divisional structures based on groups of practitioners who focus on individual decision-making with clients. There is minimal group decision making or problem-solving when staff are concerned primarily with

FIGURE 1. Knowledge Sharing Between Individuals in Organizations



Source: Adapted from Ipe, 2003

their own caseload. These departmental structures provide for very little internal networking and even fewer informal or formal opportunities to share knowledge across departments (van Beveren, 2003).

Leadership

Top and middle management leadership is crucial to the success of knowledge management. As Mason and Pauleen (2003) noted, knowledge management will only happen when top management is understanding and committed to the process. The lack of senior management support, “buy-in,” and encouragement can prevent knowledge management from being infused throughout the organization. Gaining the support of those with access to additional resources, policy, and overall direction can create an environment in which it is expected that staff members will share their knowledge and insight (Riege, 2005). For example, managers need to lead by example in sharing their own failures, lessons learned, and insights.

Education and Reward Systems

Currently, managers and front line staff have a low awareness of the value and benefit of sharing knowledge with one another (Mason and Pauleen, 2003). There is a perception in many organizations that sharing one’s knowledge may reduce or jeopardize one’s job security (Riege, 2005; Murray, 2001). In some cases, this can result in the hoarding of knowledge (Edge, 2005). Organizations spend the majority of their training time and resources on sharing explicit knowledge, rather than identifying, valuing, and learning to disseminate the tacit knowledge that exists within the organization’s workforce.

Effective knowledge management can be found in organizations where knowledge sharing is valued, evaluated, and rewarded (Reige, 2005, McDermott & O’Dell, 2001). For example, to what extent do current reward and evaluation systems encourage shared knowledge? Are knowledge sharing actions praised or do they go unnoticed? The informal reward systems and the formal employee evaluation procedures need to be assessed as part of implementing knowledge management systems. Master and Pauleen (2003) noted that several large companies with established knowledge management strategies focus on formal performance reviews using criteria related to capturing valuable knowledge, archiving it, sharing it, and making use of the knowledge of others. The formality of including the ability to effectively share knowledge in an annual performance review process provides a clear

reminder to staff of the organization's commitment to knowledge management.

STRATEGIES FOR IMPLEMENTING KNOWLEDGE MANAGEMENT

The successful implementation of knowledge management involves a cultural transformation within an organization and requires the deliberate actions of management as well as employees (Grossman, 2006). An effective knowledge management initiative represents long-term change and "does not have a beginning and an end. Rather, it is ongoing, organic, and ever-evolving" (Office of Security Defense, 2002). Managers embarking on the implementation of a knowledge management system need to assess a variety of aspects of organizational culture and develop strategies that fit the uniqueness of the organization. McDermott and O'Dell (2001) have identified five lessons for implementing knowledge management:

- make a visible connection between knowledge sharing and organizational goals, problems, or expected results
- match the overall style of the organization to the knowledge management program, making knowledge sharing a natural step and building on the strengths of the organization rather than simply replicating practices developed by other organizations
- link knowledge sharing with values held by the organization and employees including expectations, language, and mission
- enhance and build upon natural networks already in existence in the organization
- utilize influential peers to increase knowledge sharing and find ways to build knowledge sharing into routine performance reviews.

While the literature on approaches to implementing knowledge management has grown, the common components continue to include: (1) the creation of knowledge, (2) the capturing knowledge, (3) the organization and refinement of knowledge, and (4) the transferring or dissemination of knowledge throughout the organization (Awad & Ghaziri, 2004; McAdam and Reid, 2000; Edge, 2005; Nonaka and Takeuchi, 1995) For example, knowledge creation includes accessing the knowledge that currently exists within the organization as well as the creation of new knowledge through social interaction. Capturing knowledge involves the organizational value of making knowledge an explicit aspect

of organizational life. The organizing and refinement of knowledge deals with the more technical aspects of codifying, filtering, or cataloging knowledge so that others can understand and access it. And finally, dissemination involves orientation and training strategies. Each of these components has multiple strategies for implementation but are beyond the scope of this analysis. Rather, the overall approach and strategies for implementing a knowledge management system are identified.

Organizations have approached a knowledge management system from a multitude of approaches. However, to make forward progress it is generally “advisable to do a number of things along multiple fronts—technical, organizational, cultural—rather than focus on one topic” (Davenport & Prusak, 2000 p.165). Drawing on five lessons identified by McDermott and O’Dell (2001) as well as lessons identified by Davenport and Prusak (2000), the following strategies (in no particular priority) should be considered when implementing a knowledge management system:

Strategy #1: Build a visible connection between knowledge sharing and organizational goals and outcomes

An organization deciding to implement an agency-wide knowledge management system should first assess the visible ways that the organization currently engages in knowledge sharing. Do organizational goals and strategies provide for the use of knowledge sharing? Does the agency explicitly articulate the importance of and use of data-based decision-making? If the organizational mission and service goals do not explicitly state the use of knowledge and knowledge sharing, it will be more difficult to convey to staff the importance of knowledge management. Many successful organizations seeking to implement a knowledge management system have recreated the identity of the organization to include the importance of knowledge sharing. The creation of a brand or tag line in agency publications also conveys a message to staff that knowledge is valued and utilized whenever possible. While some organizations may choose to develop a high profile knowledge management initiative in order to redefine themselves as a knowledge seeking and utilizing organization, others may choose a low-key strategy that infuses knowledge management throughout the organization by connecting knowledge sharing to their departmental goals. For example, if the organizational goal is, “create an integrated, coordinated system of care,” a knowledge-inclusive goal could read, “create an

integrated, coordinated system of care utilizing the knowledge of all participants.”

Successful knowledge management organizations have also started implementation efforts by connecting the importance of knowledge sharing with a problem currently facing the organization. For example, the loss of key personnel and the perceived need to “reinvent the wheel” are problems that can inhibit reaching organizational goals. These concerns can be connected to the concept of improved knowledge management by collecting and disseminating practice wisdom (tacit knowledge) from those exiting the organization (Austin & Gilmore, 1993). Knowledge management can be framed as a strategy to reduce wasted time that prohibits staff from meeting organizational goals.

Strategy # 2: Link knowledge sharing with values held by the organization including expectations, language, recognition, and mission

Similar to the first strategy, the less-visible values that permeate the organization should be identified and assessed in order to develop a strategy for introducing knowledge sharing and knowledge management. If connected to a value already embraced by the staff, the introduction of knowledge sharing can be seen by staff as a way to further their belief in the original value, not necessarily their belief in knowledge sharing. For example, if collaboration is a value already understood and encouraged by the organization, knowledge sharing can be a method for promoting collaboration, thereby also increasing the likelihood that knowledge sharing will be embedded in the organization. As a result, knowledge sharing can strengthen an already existing value. In the same manner, if service efficiency is an organizational value, knowledge sharing can be seen as a strategy to reduce duplication and increase productivity.

The reward and recognition components of staff performance evaluation systems should also be assessed in order to determine their relationship to knowledge sharing values. For example, staff members who know they are being evaluated on their ability to use and share knowledge with their peers will be more likely to embrace the process. Promoting or praising staff based on what they know rather than how they share what they know can encourage a knowledge-hoarding rather than a knowledge sharing environment. A more formal staff recognition system can also be used to increase knowledge sharing. Regular recognition of employees who utilize best practices, share lessons learned,

utilize promising practices, or demonstrate knowledge in action can serve as role models for knowledge sharing.

Strategy #3: Tailor the knowledge management system to the style of the organization so that knowledge sharing builds upon the strengths of the organization

One approach to introducing knowledge management into an existing organizational culture is to reflect on past organizational change efforts because organizations introduce and respond to change in different ways. For example, in a more formal organizational culture, the change process might include a memo from top management that explains the need for knowledge management mechanisms for sharing, the utilization of staff training and pilot projects to introduce knowledge management, and provides a description of expected outcomes.

Another approach to introducing knowledge management involves the assessment of the learning needs of staff. Using a modified version of a Learning Needs Analysis Tool developed by Clark, Holifield, and Chisholm (2005), managers are able to assess aspects of the organization's culture that can facilitate or inhibit knowledge sharing. For example, the inventory includes the following four aspects of an organization's culture related to knowledge sharing and highlighted in Figure 2: (1) team work, (2) reflection, (3) use of tacit knowledge, and (4) functioning as a learning organization. The *teamwork* component involves the staff's ability and interest in working together by assessing team skills related to levels of trust, strength of communication, and group interaction. The *reflection* component assesses the extent to which personal and professional reflection is viewed as part of everyday work. High levels of reflection involve questioning and extracting one's own knowledge and that of colleagues through open discussion of mistakes, lessons learned, and problem-solving practices. The *use of tacit knowledge* relates to an organization's understanding of tacit knowledge and the degree to which it is valued. High levels of understanding and appreciation can greatly facilitate knowledge sharing. The fourth section related to operating as a *learning organization* includes the staff's perceptions of the organization's commitment to learning, especially the importance of intellectual capital and the promotion of staff development.

FIGURE 2. Staff Inventory for Assessing a Knowledge Sharing Culture

Team Skills

Levels of Trust

- Staff have trust in their colleagues to reflect on personal and professional issues
- There is an atmosphere of trust in the organization
- I have participated in learning dialogues with colleagues I trust

Communication

- Staff are expected to communicate with each other
- Organization supports the development of different communication techniques
- Effective communication is a priority for the organization

Group work

- Staff value the use of working in groups
- Working in groups helps me to advance my skills

Reflection

Open discussion of mistakes

- The organization encourages learning from mistakes
- There is space to share successes and failures
- The organization is one where there is comfort in questioning underlying assumptions

Comfort with colleagues

- Staff are comfortable with open discussion among their colleagues
- Staff have trust and comfort in publicly reflecting on their practice

Dialogue of lessons learned

- Organization encourages sharing and sees learning as part of everyone's job
- There is progressive discussion on what they learn from delivery of services
- Team meetings allow space to reflect on working practices

Problem-solving practices

- Critical reflection is best achieved in a team of colleagues
- The organization is based on reflection, not action
- Staff are encouraged to constantly think about their problem-solving practices

Use of Tacit Knowledge

Level of Understanding

- Organization has made staff aware of what tacit knowledge is
- Tacit knowledge is explained through work activities

Value of Tacit Knowledge

- Tacit knowledge is discussed in the organization as being important for the future
- Updating tacit knowledge important to the sustainability of the organization

Learning Organization

Importance of intellectual capital

- Organization regards individuals as having a key role in developing the organization
- Knowledge based skills are actively pursued by the organization

Promotion of staff development.

- Organization is driven by providing learning opportunities for the individual
- Management acts as a mentor for my learning

Strategy #4: By identifying the breadth and depth of knowledge that already exists in the organization, staff can build upon existing sharing networks to disseminate this knowledge

Organizations contain large amounts of tacit and explicit knowledge. Yet, staff members often do not know what knowledge exists, where it is located, how it is accessed, and how to effectively disseminate it. The majority of organizations currently have strategies and mechanisms for collecting and storing explicit information, but few have strategies for accessing tacit worker knowledge. A knowledge mapping exercise can serve as a first step in develop an inventory of what tacit knowledge exists among the staff members, where it is located, and how to access it.

Organizations, especially public sector organizations, collect and store data regarding client profiles and services provided. Line staff members collect the data and the information technology departments store and manage the information. Many organizations go a step further and disseminate the information in the form of monthly, quarterly, or annual reports. While many organizations have the explicit data available, they often fall short of translating this data into knowledge that can be utilized by staff. An essential ingredient of a knowledge management system is the capacity to translate existing organizational information into accessible knowledge for all levels of staff. Managers need to model for staff the process of translating information into knowledge for data-based decision-making.

While public sector organizations have repositories for storing internal information that can be translated into explicit knowledge, very few have repositories for the collection of tacit knowledge. The tacit knowledge, most commonly codified in the form of lessons learned, is not collected in many organizations. Often verbally disseminated through informal networks, tacit knowledge needs to be captured and stored in the same fashion as explicit information. Lessons learned from staff can be easily extracted, documented, and disseminated as well as continuously reassessed, altered, and shared. This tacit knowledge can be incorporated into staff orientation and training programs.

In addition to capturing tacit knowledge, it is also important to understand the natural and informal networks that staff members use to find out who knows what, where to get advice, and how to learn more about enhancing their professional practice. Effective informal networks often reflect established trust, open communication, and a mutual obligation to share knowledge. Staff meetings and case conferences are locations where staff share knowledge on a regular basis. Managers

may not have access to the informal networks where staff are comfortable questioning, doubting, or sharing lessons learned. In order to identify the most effective networks for introducing knowledge sharing, managers need to know where staff members naturally turn to get knowledge for problem-solving and their preferences for using technology or face-to-face interactions.

Strategy #5: Identify the key knowledge workers within the organization as well as the roles and responsibilities of all staff to increase knowledge sharing

Knowledge management in an organization begins with the staff members who create, hold, and share knowledge. In addition, each organization needs to identify individuals who already function as knowledge workers; namely, someone skilled at transforming experience into knowledge by capturing, assessing, applying, sharing, and disseminating it in order to solve problems and/or achieve outcomes. A knowledge worker is a critical thinker, a continuous learner, an innovative thinker, team player, a creative risk-taker, and someone committed to the value of knowledge (Awad & Ghaziri, 2004). These personal traits are often complemented by systems-oriented skills related to an ability to identify strategies needed to capture and disseminate knowledge, an understanding of barriers and facilitators of knowledge sharing, and an understanding of the technological issues involved in sharing and dissemination. Individuals who possess these skills can be found throughout the agency at all levels. Once identified, these individuals should be recruited to assist in the implementation of knowledge management strategies and empowered to influence others. Knowledge management leaders should assess all levels of the agency to identify (1) who are the natural knowledge workers, (2) who are the potential knowledge workers, and (3) the role and responsibilities of each worker to share knowledge.

While certain individuals are naturally oriented to knowledge sharing, each worker at every level of the organization can play a role in the implementation of a knowledge management strategy. These roles and responsibilities can be incorporated into in-service training, hiring practices, worker expectations, and reward systems. In assessing an organization prior to implementing knowledge management strategies, leaders need to evaluate how well different levels of staff carry out the following roles and responsibilities:

Senior level staff: Since the implementation of knowledge management strategies requires top-level support and leadership, the following roles and responsibilities can help infuse knowledge management throughout the organization:

- *Set an example of being a knowledge user and sharer.* Senior level staff need to provide public examples of how they question, gather, analyze, and utilize data for their decision-making. A transparent decision-making process will begin to increase the value of questioning, brainstorming, exchanging ideas, and making informed decisions.
- *Make visible connections between knowledge sharing and organizational goals.* Senior managers need to find ways to state repeatedly, internally and externally, that knowledge management and organizational learning is critical to achieving the goals of the organization.
- *Link knowledge management to the organization's culture related to mission, values, and expectations.* Infusing knowledge management language throughout the organization will help to transform the culture of the organization in order to feature knowledge sharing as part of everyday problem solving.
- *Allocate resources to knowledge management strategies and infrastructure development.* Allowing staff time to participate in knowledge sharing networks or a knowledge management task force, investing in technology to increase peer sharing, or hiring staff responsible for capturing and disseminating knowledge.

Middle managers: Middle managers play an important role in instilling knowledge management values throughout the agency. They translate the overarching organizational knowledge management strategies into practical activities that support line staff. Middle managers are the enablers, supporters, and champions of knowledge management and need to be able to model the following roles and responsibilities:

- *Ability to extract and document information from staff.* Middle managers are in direct contact with line staff who possess considerable amounts of tacit knowledge. Middle managers should be skilled at extracting important information from their staff. Once extracted, middle managers should be responsible for organizing and disseminating this information as needed.
- *Encourage risk-taking, innovation, and regular review of lessons learned.* Middle managers are responsible for creating open environ-

ments that allow discussion of mistakes, reasons for successes, and continuous dialogue regarding lessons learned.

- *Develop reward structures that encourage sharing.* Middle managers need to develop mechanisms that foster internal and external rewards for sharing, rather than hoarding knowledge.
- *Promote transparency.* Middle managers that are transparent with their own processes related to questioning and doubting, information gathering, and decision-making will increase the value of learning for others.
- *Provide leadership.* Middle managers need to coach and mentor line staff who are exploring, questioning, and seeking opportunities to learn and share.

Line staff: Line staff are responsible for being knowledge learners in their daily interactions with clients, coworkers, and managers. Line staff that display the following are demonstrating a commitment to knowledge management:

- Search out, create, share, and use knowledge in their everyday interactions
- Continuously questioning self and others
- Critically thinking about their approach to work and reviewing past cases for lessons learned (positive and negative)

Strategy #6: Utilize a knowledge management task force or committee to facilitate the implementation of knowledge management strategies

While knowledge management is most successful when it is part of everyone's job, it usually requires the efforts of dedicated staff to embed knowledge management strategies into an organization, especially during the beginning phases of change. Many for-profit organizations have appointed chief knowledge officers (CKOs) whose sole responsibility is to create knowledge management systems. While this approach may be appropriate for the for-profit sector, it may be more appropriate in the non-profit and public sectors to create a knowledge management task force that includes individuals from all levels of the organization. This task force carries similar responsibilities and should be comprised of individuals with similar skills embodied by a CKO. The task force members need to have a vision of how they want knowledge management to function in their agency. They "should spur and catalyze the imagination, encouraging workers to think about the future in improvisational and innovation ways" (Office of Security Defense, 2002, p. 4).

In addition, the task force should be viewed as a change agent with the following mandate: (1) bring a hybrid of management and service delivery expertise to the agency, (2) challenge conventional or traditional approaches to system delivery, (3) understand IT principles, (4) be managers with broad organizational experience, (5) bridge the gap between technology and service delivery, and (6) be avid learners who seek advice, ask questions, and seek new ideas (Office of Security Defense, 2002).

Ideally, a task force within the public sector would include all levels of staff whereby senior managers, middle managers, and line staff would work together to build a knowledge culture and create a knowledge management structure. Such a group could assume the following roles and responsibilities:

- *Advocate for knowledge and learning.* By including knowledge sharing language into everyday language, actions, and work of the organization, it should be possible to see the impact on the mission, values, and goals of the organization. Is there a clear commitment to becoming a learning organization? Do performance evaluation procedures promote knowledge hoarding or knowledge sharing?
- *Design, implement, and oversee the organizations knowledge infrastructure.* Identify where knowledge is currently created, transferred, documented, and stored. Build protocols and mechanisms to document lessons learned.
- *Provide input into the process of knowledge creation and use in the organization.* Support managers in their efforts to include knowledge creation and sharing in their programs (i.e., during staff meetings, case conferences, supervision).
- *Develop strategies to increase the knowledge sharing skills of senior, middle, and direct service staff.*

CONCLUSION

Knowledge management starts as a *process* of understanding the value an agency places on knowledge and gathering a clear picture of where knowledge exists within the agency. Beginning with an agency assessment, managers are able to gauge the organization's commitment to learning, understand the current organizational culture, and gather insight into the current internal inhibitors and facilitators of knowledge

FIGURE 3. Strategies for Implementing a Knowledge Management System in a Human Service Organization

Multiple Strategies

Strategy #1: Build a visible connection between knowledge sharing and organizational goals and outcomes

Strategy #2: Link knowledge sharing with values held by the organization including expectations, language, recognition, and mission.

Strategy #3: Tailor the knowledge management system to the style of the organization so that knowledge sharing builds upon the strengths of the organization

Strategy #4: By identifying the breadth and depth of knowledge that already exists in the organization, staff can build upon existing sharing networks to disseminate this knowledge.

Strategy #5: Identify the key knowledge workers within the organization as well as the roles and responsibilities of all staff to increase knowledge sharing.

Strategy #6: Utilize a knowledge management task force or committee to facilitate the implementation of knowledge management strategies

Roles and Responsibilities

Senior level staff:

- Set an example of being a knowledge user and sharer
- Make visible connections between knowledge sharing and organizational goals.
- Link knowledge management to the mission, values, and expectations.
- Allocate resources to knowledge management strategies and infrastructure development.

Middle Managers:

- Demonstrate ability to extract and document information from staff
- Encourage risk-taking, innovation, and regular review of lessons learned
- Develop reward structures that encourage sharing
- Promote transparency by modeling their own knowledge sharing processes
- Provide leadership, coaching, and mentoring

Line staff:

- Search out, create, share, and use knowledge in their everyday interactions
- Continuously questioning self and others
- Critically think about their approach to work and review past cases for lessons learned

Knowledge Manager and Representative Task Force Staff:

- Advocate for knowledge and learning.
- Design, implement, and oversee the organizations knowledge infrastructure.
- Provide input into the process of knowledge creation and use in the organization.
- Develop strategies to increase senior, middle, and line staff knowledge and skills in knowledge sharing.

sharing. From this assessment, managers can effectively design a knowledge management initiative that fits the organization.

Since its inception, knowledge management has encountered serious issues, including excessive hype and flawed approaches that have hindered acceptance and limited the potential benefits (CIO Council, n/d).

While numerous knowledge management approaches exist, the consistent recommendation from research is to connect the knowledge management approach to the currently operating *structure of the organization*. Knowledge management can be an elusive, visionary concept that gets lost in the translation of key principles into practice. Connecting the knowledge management initiative to a current organizational priority can increase the likelihood of successful implementation. Equipped with the information from the organizational assessment, managers need to explore different ways of making knowledge management relevant to staff by building something that staff understand and need to change.

Implementing a knowledge management system is a slow process that cannot be forced. There is not a precise beginning and definite ending to a knowledge management initiative. Rather, the process is characterized as one of exploration and experimentation. Agencies that are open to fresh, new ideas and continuously searching for better ways to serve clients should prove to be the most effective and successful in implementing knowledge management processes (see Figure 3, p. 385).

REFERENCES

- Andrews, K.M. & Delahaye, B.L. (2000). Influences on knowledge processes in organizational learning: The psychological filter. *Journal of Management Studies*, 37(6), 797-810.
- Augier, M. & Vendelo, T. (1999). Networks, cognition and management of tacit knowledge. *Journal of Knowledge Management*, 3(4), 252-261.
- Austin, M.J. & Gilmore, T. (1993). Executive exit: Multiple perspectives on managing the leadership transition. *Administration in Social Work*, 17(1), 47-60.
- Awad, E. & Ghaziri, H. (2004). *Knowledge Management*. New Jersey: Prentice Hall.
- Bartol, K. & Srivastava (2002). Encouraging knowledge sharing: The role of organizational reward systems. *Journal of Leadership and Organizational Studies*. 9(1), 64-76.
- Brown, J. & Duguid, P. (2001). Knowledge and organization: A social-practice perspective. *Organization Science*, 12(2), 198-213.
- Busch, P., & Richards, D. (2001). Graphically defining articulable tacit knowledge. In P. Eades, & J. Jesse (Eds.), *Selected Papers from Pan-Sydney Area Workshop on Visual Information Processing*: Vol. 2 (pp. 51-60). Sydney: ACS. Retrieved April 10, 2006, from <http://crpit.com/confpapers/CRPITV2Busch.pdf>.
- Chua, A., & Lam, W. (2005). Why KM projects fail: A multi-case analysis. *Journal of Knowledge Management*, 9(3), 6-17.
- Clark, T, Holifield, D., & Chisholm. (2005). A continual professional development toolkit for knowledge management in the workplace. *Paper presented at UICEE Conference in Al-*

- giers May 2005. Retrieved on June 20, 2006 at http://www.elite.aau.dk/cee_as_wbl/Project_results/Docs/conference%20africa%2005-3.pdf
- Cohen, W. & Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35, 128-152.
- Davenport, T., & Prusak, L. (2000). *Working knowledge: How organizations manage what they know*. Harvard Business School Press.
- De Long, D. & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management. *The Academy of Management Executive*, 14(4), 113-127.
- Dyer, J. & Nobeoka, K. (2000). Creating and managing a high-performance knowledge-sharing network: The Toyota case. *Strategic Management Journal*, 21, 345-367.
- Edge, K. (2005). Powerful public sector knowledge management: A school district example. *Journal of Knowledge Management*, 9(6), 42-52.
- Galbraith, J. (1973). *Designing Complex Organizations*. Addison-Wesley: Reading, MA.
- Gold, A., Malhotra, A., & Segars, A. (2001). Knowledge Management: An organizational capabilities perspective. *Journal of Management Information Systems*, 18(1), 185-214.
- Grant, R. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17, 109-122.
- Grossman, M. (2006). An overview of knowledge management assessment approaches. *The Journal of American Academy of Business*, 8(2), 242-247.
- Hansen, M., Nohria, N., & Tierney, T. (1999). *What's your strategy for managing knowledge?* Harvard Business Review (HBR).
- Haynes, P. (2005). *New development: the demystification of knowledge management for public services*. Public Money & Management, 4, 131-135
- Hendriks, P. (1999). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, 6(2), 91-100.
- Horvath, J. (2001). Working with tacit knowledge. In J. Cortada, & J., Woods (Eds.), *Knowledge Management Yearbook* (35-50). Butterworth-Heinemann. Retrieved April 5, 2006, from http://www.providersedge.com/docs/km_articles/Working_With_Tacit_K.pdf
- Howells, J. (1996). Tacit knowledge, innovation and technology transfer. *Technology Analysis and Strategic Management*, 8(2), 91-106.
- Huber, G. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science*, 2(1), 88-115.
- Ipe, M. (2003). Knowledge sharing in organizations: a conceptual framework. *Human Resource Development Review*, 2(4), 337-359.
- Ives, W., Torrey, B., & Gordon, C. (2000). *Knowledge sharing is a human behavior*. In D. e. a. Morey (Ed.), *Knowledge Management*. Cambridge, MA: MIT Press.
- Leonard, D. & Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review*, 40(3), 112-132.
- Liebowitz, J., & Chen, Y. (2003). *Knowledge sharing proficiencies: The key to knowledge management in Holsapple*. In *Handbook on Knowledge Management 1: Knowledge Matters*. Springer-Verlag, Berlin.

- Madhavan, R., & Grover, R. (1998). From embedded knowledge to embodied knowledge: New product development as knowledge management. *Journal of Marketing*, 62(4), 1-12.
- Mason, D., & Pauleen, D. (2003). *Perceptions of knowledge management: A qualitative analysis*. *Journal of Knowledge Management*, 7(4), 38-48.
- McAdam, R., & Reid, R. (2000). A comparison of public and private sector perceptions and use of knowledge management. *Journal of European Industrial Training*, 24(6), 317-329.
- McDermott, R., & O'Dell, C. (2001). Overcoming cultural barriers to sharing knowledge. *Journal of Knowledge Management*, 5(1), 76-85.
- Murray, S. (2001). *Motivating public sector employees*. Financial Times, 10.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I. & Takeuchi, H. (1995). *The knowledge creating company: How Japanese companies create the dynamics of innovation*. New York: Oxford University Press.
- Office of Security Defense (OSD). (2002). *Knowledge management: Maximizing human potential*. Retrieved June 20, 2006 at www.dod.mil/comptroller/center/learn/knowledgeman.htm.
- Perrow, C. (1967). A framework for the comparative analysis of organizations. *American Sociological Review*, 32, 194-208.
- Probst, G., Raub, S., & Rombhardt, K. (2000). *Managing Knowledge*. Chichester: John Wiley & Sons.
- Riege, A. (2005). Three-dozen knowledge sharing barriers managers must consider. *Journal of Knowledge Management*, 9(3), 18-35.
- Schein, E. (1985). *Organizational Culture and Leadership*. San Francisco, CA: Jossey-Bass.
- Seidler-de Alwis, R., & Hartmann, E. (2004). *The significance of tacit knowledge on company's innovation capability*. In B. Bekavac, J. Herget & M. Rittberger (Eds.). *Informationzwischen Kultur und Marktwirtschaft. Des 9. Internationalen Symposiums*. Vol. 42 (pp.373-394), Retrieved April 7, 2006, from <http://www.inf-wiss.uni-konstanz.de/infwiss/download/isi2004/cc-isi04-art21.pdf>
- Stenmark, D. (2000). Turning tacit knowledge tangible. *Paper presented at the 33rd Hawaii International Conference on System Sciences, Hawaii*. Retrieved April 12, 2006, from <http://csdl2.computer.org/comp/proceedings/hicss/2000/0493/03/04933020.pdf>
- Svieby, K., & Simons, R. (2002). Collaborative climate and effective knowledge work: an empirical study. *Journal of Knowledge Management*, 6(5), 420-433.
- Swarts, J., & Pye, A. (2002). Conceptualising organizational knowledge as collective tacit knowledge: a model of redescription. *Paper presented at the Third European Conference on Organizational Knowledge, Learning and Capabilities*. Athens, Greece. Retrieved April 12, 2006, from <http://www.tacitknowing.com/papers/ID315.pdf>
- Syed-Ikhsan, S., & Rowland, F. (2004). Knowledge management in a public organization: a study on the relationship between organizational elements and the performance of knowledge transfer. *Journal of Knowledge Management*, 8(2), 95-111.

- Tagger, B. (2005). *An enquiry into the extraction of tacit knowledge*. Retrieved April 30, 2006, from <http://www.cs.ucl.ac.uk/staff/B.Tagger/FinalIMR.pdf>
- Taylor, W. A., & Wright, G. H. (2004). Organizational Readiness for Successful Knowledge Sharing: challenges for public sector managers. *Information Resources Management Journal*, 17(2), 22-37.
- Van Beveren, J. (2003). *Does health care for knowledge management?* *Journal of Knowledge Management*, 7(1), 90-95.
- von Hippel, E. (1994). "Sticky information" and the locus of problem solving: Implications for innovation. *Management Science*, 40, 429-430.
- Von Krogh (2002). The communal resources and information systems. *The Journal of Strategic Information Systems*. 11(2), 85-107.
- Weiss, L. (1999). Collection and connection: The anatomy of knowledge sharing in professional service. *Organizational Development Journal*, 17(4), 61-74.
- Zeira, A., & Rosen, A. (2000). Unraveling "Tacit Knowledge": What social workers do and why they do it. *Social Services Review*, 74(1), 103-118.

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