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**KNOWLEDGE MANAGEMENT**

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**ABSTRACT**

This paper draws on primary and secondary data to discuss Knowledge Management and its implementation. As organizations become increasingly aware of the value of knowledge in today's competitive environment, knowledge management initiatives have also increased proportionally. For the purpose of this paper, knowledge is defined as "the process through which organizations generate value from their intellectual and knowledge-based assets" (Santosus & Surmacz, 2001). The primary purpose of the paper is to give a general presentation of the field of knowledge management and tacit knowledge in particular, identify some of the best practices in implementing and managing knowledge management programs, and describe how KM effectiveness can be measured. Information collected from a survey among several large companies of the St. Louis area is used to illustrate our discussion.

## INTRODUCTION

In a 2002 article titled "The Evolution of Knowledge Management", David Coleman writes that in interviews with eight vendors of Knowledge Management (KM) solutions "[i]t became apparent very quickly that no vendor meant the same thing by KM. They all acknowledged that the definition was nebulous and some of the vendors were not even sure that they were in KM space anymore." This clearly states a dilemma that our team faced while researching KM: there is no one single accepted definition of knowledge and knowledge management. However, as we began developing our survey, our team reasoned that to ensure that all parties knew how we approached the subject we needed to give our definition of KM. After reading numerous definitions, our team decided upon this definition of KM: "KM is the process through which organizations generate value from their intellectual and knowledge based assets." (Santosus and Surmacz, 2001)

While most of our survey respondents agreed with this definition, it was clear that the definition lacked the specifics necessary to direct policy in a business setting. After analyzing the survey results, it became apparent why there were so many divergent definitions of KM: each of our respondents had a different idea of what KM does. Some companies think that KM is process-based, others focus on systems, and still others think of KM as a company culture of openness and sharing.

Because of the on-going debate about the definition of knowledge and knowledge management, this paper will not attempt to give a global definition of what KM is or should be. Instead, the paper will attempt to give an overview of knowledge, knowledge management, and its applications in today's business environment. Section 1 will give a brief history of knowledge management, describing where the field of KM has been and what it has done. Section 2 will discuss KM implementations in today's organizations and identify some of the best practices. Section 3 will look more particularly at how tacit knowledge is managed and handled in organizations today. Section 4 will describe the cost and benefits of implementing KM programs and how KM effectiveness can be measured. Section 5 will present some of the trends that we see in the future of KM. Finally, Section 6 will summarize our findings and conclude the paper.

Throughout the paper, we use data collected via a survey (See Appendix 4.0) sent to six large corporations in the St. Louis area. Responses were received from five companies. A follow up survey was sent to four of the five companies and three were returned. Due to the limited number of surveys collected, the information received is mostly used to verify and illustrate some of the findings from our research.

## SECTION 1: HISTORY OF KNOWLEDGE MANAGEMENT

To understand Knowledge Management and its history, we must first discuss the concept of knowledge transfer. Whether it be through hands on experience, modeling, or any other type of education techniques, knowledge can be equated to the lessons that are learned. How these “lessons learned” are disseminated is the concept of knowledge transfer. Perhaps the most refined example of knowledge transfer is not found among humans but in nature. For example, if you take a Labrador retriever puppy to a lake and throw a stick into the water the puppy will swim out to retrieve the stick. The skills of swimming and retrieving were not taught but the knowledge was transferred from the parent dogs to the puppy.

Knowledge transfer among humans is much more complex and much more widespread than that of the animal kingdom. Human language is perhaps the most widely used tool for knowledge transfer. In the early years of human existence migrating tribes would carry their traditions, customs and most importantly technology to diverse parts of the world. The earliest knowledge transfer specialists were the village storytellers who would repeat stories by rote, sharing lessons that were learned by past generations. Language was enhanced by the written word; the printing press and, later, electronic tools enhanced the written word. Even with technological advances, fundamental problems with knowledge transfer still remain. The thesis to a paper about the history of Knowledge Management states:

*“Even with modern tools, the process of knowledge transfer is inherently difficult, since those who have knowledge may not be conscious of what they know or how significant it is. Thus, know-how is “sticky” and tends to stay in peoples heads.” (Denning, 2000)*

The above statement leads us to one of the principles of Knowledge Management: To facilitate the often-difficult task of knowledge transfer.

Although the modern history of knowledge management is generally considered to begin with the publishing of Michael Polyani’s book “The Tacit Dimension” in 1967, some believe that KM has its beginnings in Frederick Taylor’s Scientific Management of 1911. Again, this discrepancy is due to the lack of a clear-cut definition of what KM is and what KM does. However, from Polyani’s work, two concepts about knowledge were later applied to Knowledge Management by Ikujiro Nonaka (1991): tacit and explicit knowledge. Nonaka defines tacit knowledge as “highly personal.” A knowledge that “is hard to formalize and, therefore, difficult to communicate to others” (p. 98). Explicit knowledge, on the other hand, “is formal and systematic. For this reason, it can be easily communicated and shared, in product specifications or a scientific formula or a computer program” (p. 98). From 1967 to the present, KM has

gone through several iterations often taking one step forward and two steps back. At times, it appears that there is a rift between the academic community and the business community and this rift seems to center around how KM works in application. For example, in an article written for CIO magazine, Carol Hildebrand writes:

*“As organizations label their document management, database or groupware products as “knowledge management solutions”, executives can be excused for mistaking the software for the solution.” (Hildebrand, 1999)*

Much like the news media jumping on a pointless story because it is good for the ratings, vendors have jumped on the KM bandwagon in an attempt to capitalize on the popularity of the buzzword to market their products. This has done nothing but add to the confusion of people interested in KM. As stated by David Coleman above and reinforced by our research with several major corporations in the St. Louis area, there is no universally accepted definition for Knowledge Management. Intuitively, there are no clearly defined boundaries to determine what is Knowledge Management. When asked why the company did not have a defined KM vision, the respondent from a major utility commented “[there is t]oo much confusion in the KM landscape, both from technology vendors and research consultants. It is difficult to form a vision when it’s [KM] an unclear, moving target.”

## **SECTION 2 : KNOWLEDGE-BASED ORGANIZATIONS AND BEST PRACTICES**

Although knowledge and knowledge management are terms difficult to define, researchers and practitioners collectively agree that, in today’s business environment, knowledge is the source of sustainable competitive advantage. The significance of knowledge for today’s organizations triggers a series of questions: Why is knowledge so important to organizations? What are some of the current KM initiatives? What is the role of the knowledge manager within the knowledge-based organization? What are the conditions necessary for implementing successful KM initiatives? In this section, we will try to answer these questions and identify the major best practices that can help organizations implement successful knowledge management projects.

### **WHY IS KNOWLEDGE SO IMPORTANT TO ORGANIZATIONS?**

As organizations have striven to find ways to compete in the information age, knowledge has emerged as the primary resource and most valuable asset in this fast-paced, ever-changing environment. In fact, “[u]nlike material assets, knowledge assets increase with use: Ideas breed new ideas, and shared knowledge stays with the giver while it enriches the receiver” (Davenport & Prusak, 1998, p. 17). As knowledge is transferred from one individual to the other, it is combined with personal experiences and

expertise, and built upon to create new ideas and knowledge. Therefore, its value increases exponentially: the larger the knowledge pool, the more valuable the new knowledge received will be. This explains why many researchers have now identified knowledge as the only source of sustainable competitive advantage (Davenport & Prusak, 1998, p. 17; Asllani & Luthans, 2003, p. 54; Snyman & Kruger, 2004, p. 7).

Unlike traditional competitive advantages (such as price, products, or technical leads), knowledge advantages cannot be copied or reproduced because knowledge is dependent upon the context in which it is considered. "The reason for this is that although knowledge can be shared, the manner in which it is internalized and applied will be different for every person, situation and enterprise" (Snyman & Kruger, 2004, p. 7). From a business perspective, the numerous possible combinations of pieces of knowledge and people within an organization can be a source of sustainable competitive advantage and thus extremely lucrative.

Over the past decade, organizations came to realize that their companies' balance sheets not only reflected their financial capital, but also reflected their intellectual capital, which added to their market value. While an enterprise's book value consists of the value of its financial and physical assets, its "intellectual capital is considered knowledge that can be converted into value, such as inventions, ideas, general knowledge, designs, computer programs, patents, data processes and publications" (Diakoulakis, Georgopoulos, Koulouriotis & Emiris, 2004, p. 38). Therefore, profit can be made from exploiting intellectual capital and since knowledge and the nurturing of knowledge is at the source of intellectual capital, the management of knowledge becomes extremely important for organizations.

#### **WHAT ARE SOME OF THE CURRENT KNOWLEDGE MANAGEMENT INITIATIVES?**

As discussed in Section 1, organizations have been implementing knowledge management techniques for a long time. Karl Wiig (1999) gives the example of a steel minimill in Texas which "had practiced systematic and comprehensive KM since its inception in 1975." Although these initiatives have not usually been recognized as such, they were in essence informal knowledge management projects, for the most part implemented at the department-level. During the last decade, as knowledge has been recognized as a valuable asset to the organization, these various KM initiatives have been combined and coordinated to form company-wide KM projects. This development was confirmed in our survey where the majority of the companies that responded identified the origin of their KM program in the confluence of various initiatives started at the department level. So far, it appears that KM projects have been mostly regarded as ad hoc initiatives, developed and implemented to address specific business objectives within an organization's individual departments. In fact, Western organizations' knowledge management initiatives

have mainly focused on the development and implementation of knowledge repositories (Grover & Davenport, 2001, p. 9). However, new approaches responding to specific organizational objectives have become more frequent, and as KM initiatives have become successful, the desire to establish company-wide KM programs has also increased. The table below summarizes the most frequent reasons why companies implement knowledge management initiatives.

<b>Goals</b>	<b>Description</b>
Giving access to knowledge	Capturing individual and group-held knowledge and making it accessible to the whole organization. In this scenario, information technology plays an important role in capturing, storing, and facilitating access to knowledge.
Mapping organizational knowledge	Building knowledge directories by capturing and providing access to those who have knowledge in the organization. In this scenario, the role of information technology is limited to that of connecting knowledge providers and knowledge seekers.
Generating revenues	Managing knowledge as a valuable asset in order to exploit it and profit from it. In this scenario, the role of information technology is mainly to provide support to the KM processes.
Creating competitive advantage	Managing knowledge as a dimension of competitive strategy. Recognizing knowledge as an important resource and a source of sustainable competitive advantage. In this scenario, information technology will support KM initiatives through a mixture of networks, systems, tools, and knowledge repositories.
Setting up knowledge communities	Pulling together a group of people with a common interest, problem, or experience. In this scenario, information technology contribution is limited to connecting members and pooling their knowledge, both explicit and tacit, through a combination of Intranets and groupware.

*Table 1 – Most frequent goals of KM projects (adapted from Earl, 2001).*

It is important to differentiate between managing knowledge and managing knowledge *processes*. Knowledge in itself is almost impossible to manage since it resides in the human brain and, therefore, cannot be easily controlled through management strategies. Rather, knowledge management aims at controlling the process capabilities of acquiring, converting, applying, using, and protecting knowledge. However, without these processes knowledge has no value. Knowledge needs to be encouraged, nurtured, developed, and “bundled in some way” in order to generate value (Kakabadse, Kakabadse & Kouzmin, 2003, p. 76). Indeed, organizations need infrastructures in order to “manage or support processes of learning rather than managing knowledge” (Kakabadse, Kakabadse & Kouzmin, 2003, p. 86).

**WHAT IS THE ROLE OF THE KNOWLEDGE MANAGER WITHIN THE KNOWLEDGE-BASED ORGANIZATION?**

Although a number of organizations have adopted a structural approach to knowledge management by establishing a separate entity with a Chief Knowledge Officer (CKO) as the department head, this has not yet been established as the norm. However, the responsibilities of a CKO and a manager in charge of knowledge management at the department level (knowledge manager) are similar – if not in scope, at least in what is entailed by knowledge management. In their article about knowledge managers, Asllani and Luthans (2003) state that “[t]he challenge facing today’s managers is to manage both the technological and human aspects of knowledge” (p. 54). Knowledge managers are not only responsible for the collection, conversion, and storage of data and information via information technology tools, but they are also in charge of managing knowledge workers, encouraging the creation of new knowledge, establishing a knowledge-friendly culture, and making sure that knowledge is shared and used. As such they need to demonstrate their understanding of knowledge and how it can be used (knowledge processes) to support business objectives, of information technology tools and how they can be used to support knowledge processes, and of knowledge workers and how to set up an environment for them to create, share, and use knowledge in order to generate value for the firm as a whole.

Even though only two out of the six companies surveyed had a separate department in charge of KM initiatives, there are advantages in establishing a formal organizational structure for KM. As Grover and Davenport point out in “General Perspectives on Knowledge Management”, “a CKO has an important role, both for operational and symbolic reasons” (Grover & Davenport, 2001, p. 10). The presence of a CKO and a separate entity within an organization is a symbol of the will and seriousness of the organization regarding their KM programs. That is, the perceived importance of a KM initiative is directly proportional to the efforts and money invested in the program. Therefore, establishing an organizational infrastructure is one way for senior management to communicate to employees the importance of KM initiatives for the organization.

The role of a knowledge manager in today’s knowledge-based organizations is still regarded as a challenge (Asllani & Luthans, 2003, p.55). It implies “developing strategies, policies, and practices that optimize the knowledge resources of an organization” (Barclay & Klaye, 2000, as cited in Asllani and Luthans, 2001, p. 55). As more and more KM initiatives succeed, knowledge managers will certainly find their job easier and become part of the general organizational structure. However, there are already a number of conditions that organizations can strive to establish in order to implement successful KM initiatives.

### **WHAT ARE THE CONDITIONS NECESSARY FOR IMPLEMENTING SUCCESSFUL KM INITIATIVES?**

There are a series of empirical studies that have been helpful in identifying critical success factors of KM projects (Davenport, De Long & Beers, 1998; Gold, Malhotra & Segars, 2001; McCann III & Buckner, 2004). Instituting a knowledge-oriented culture, establishing organizational structures, securing senior management support, and utilizing effective motivational tools are four major conditions necessary to successful KM initiatives.

Gold, Malhotra and Segars argue that “[p]erhaps the most significant hurdle to effective knowledge management is organizational culture” (p. 189). Because knowledge – and especially tacit knowledge – is transmitted through interactions and communications between people, an organization should establish a knowledge-friendly culture and encourage its employees to communicate, both formally and informally. Establishing trust at all levels of the organization is essential as employees feel confident enough to share and contribute to the organizational knowledge. A clear vision and senior management support is also critical in decreasing employees’ reluctance to share knowledge.

The significance of senior management support depends on the objective of a particular KM project. In one of their studies, Davenport, De Long, and Beers (1998) found that “strong support from executives was crucial for transformational-oriented knowledge projects but less necessary in efforts to use knowledge for improving individual functions or processes” (p. 54). However, similarly to other enterprise-wide projects, establishing a knowledge-based organization cannot be realized without the support of senior management.

As we have seen in the previous section, establishing an organizational infrastructure can help with motivating and encouraging people to share, use, and create knowledge. CKOs and knowledge managers are one form of organizational infrastructures. However, some companies are also including physical space as a way to encourage the sharing and creation of knowledge. By building or renovating facilities in order to facilitate knowledge exchange (Earl, 2001, p. 225), organizations are providing their employees with places and opportunities to meet in informal settings that are more conducive to interactions. Such settings include “the water cooler as a meeting place, the open-style coffee bar or kitchen as a ‘knowledge café’, the open-plan office as a ‘knowledge building’” (Earl, 2001, p. 225).

Finally, effective motivational tools are also needed to encourage knowledge creation and sharing. Employees may be reluctant to share their knowledge for a variety of reasons which very often revolve around fear and power. They may be afraid of becoming obsolete, or they may want to retain the power

that their knowledge gives them. Organizational culture can help tremendously by establishing trust. However, reward and incentive systems may also be necessary to encourage people to participate in the sharing and creation of knowledge at an organizational level. One of the companies surveyed indicates that they use a system of "citizenship", that is included into the performance appraisal program, in order to encourage employees to participate in their KM project.

Thus, the successful implementation of knowledge management initiatives depends on how organizations will adapt the above factors to the size of the project (individual departments versus company-wide) and the objective of the project (see table 1). Therefore, it is important for organizations that are planning a KM project to take the time to review their objectives, conduct benchmarking with other similar organizations, and integrate knowledge management practices with other elements of their business environment, such as "strategy, process, culture, and behavior" (Grover & Davenport, 2001, p. 13).

### **SECTION 3: TACIT KNOWLEDGE**

We have defined KM as the "process through which organizations generate value from their intellectual and knowledge based assets" (Santosus & Surmacz, 2001, p. 1). These intellectual and knowledge based assets can generally be grouped into two categories: explicit knowledge and tacit knowledge. Of the two categories, tacit knowledge is much more difficult to comprehend than explicit knowledge. Tacit knowledge is simply the "know-how contained in people's heads" (Santosus & Surmacz, 2001, p. 1). Therefore, within an organization, tacit knowledge is made up of the collective "know-how" of all its employees. Tacit knowledge is widely accepted today as a key approach to sustaining an organization's competitiveness. Tacit knowledge also plays a vital role in organizational learning and technological innovation. Organizations today are presented with quite a challenge in regards to benefiting from their tacit knowledge. In order for an organization to use tacit knowledge successfully, they must first recognize tacit knowledge and its importance. After recognition, organizations should then learn how to generate tacit knowledge, which must then be shared with individuals or groups that need this knowledge. This process of recognition, generation, and sharing is management of tacit knowledge.

Research has shown that most organizations successfully recognize, generate, and understand the importance of tacit knowledge. Organizations also realize that this knowledge must be shared in order to achieve any of the benefits associated with the successful implementation of KM. While organizations realize tacit knowledge must be shared, this step is much easier said than done. One way to transfer or share tacit knowledge is through a process known as socialization. Socialization is defined as "a process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills. While formal instruction may be involved ...socialization generally ... [occurs] through [an] informal

process.”(Swap, Leonard, Shields, & Abrams, 2001, p. 98). Two informal mechanisms for sharing tacit knowledge include mentoring and storytelling. Mentoring is a much more common practice in today's organization than storytelling. Most organizations implement a formal mentoring program and encourage informal mentoring as well. Of the St. Louis based organizations that were surveyed, seventy five percent employ a formal mentoring program. While not as formally implemented in organizations, storytelling is arguably the “best way to capture and transfer tacit knowledge”(Reamy, 2002, p. 1).

“The word Mentor can be traced back to Homer's myth of Odysseus. The king of Ithaca left his son Telemachus in the care of Mentor, who guided and taught the youth for the 10 years his father was away fighting the Trojans. A mentor, therefore, has always been considered one who draws upon a deep knowledge base to teach and guide” (Swap, Leonard, Shields, & Abrams, 2001, p. 98-99). It is quite understandable why mentoring has become so commonplace in organizations today. In fact, organizational mentoring has seen the most significant growth just in the last twenty years. This significant growth is directly related to organizations' most valuable resources: their people. It is an organization's people and the knowledge and expertise that they possess that help to build and sustain an organization's competitive advantage. Mentoring is a way for an organization to ensure that this knowledge and expertise can be shared among its people, therefore increasing and/or sustaining their competitive advantage.

One critical success factor of a mentoring program is a successful development of a mentoring culture. Organizations should not just implement a mentoring program because it is a good business practice. Organizational goals should be developed, for which a mentoring program could and should be based on. “Increasing diversity or making your organization a better place to work” are examples of solid business goals (Lindenberger, n.d., p. 2). Creating a mentoring culture must also involve the right kind of people. People must be willing to help other people for a mentoring program to be truly successful. With the right people involved, organizations must now develop their people to their fullest potential. In order to develop their people, organizations should provide “training opportunities, challenging projects and assignments, feedback, coaching and mentoring. In one study with people who had experienced real mentors, half of them said the mentoring experience ‘changed my life.’ Those are powerful words.” (Lindenberger, n.d., p. 2). It is clear that in the right setting, mentoring programs can flourish. In addition to a solid foundation of organizational goals, key concepts should be developed for the mentoring programs themselves. One such concept is for the mentors to teach both good and bad lessons. Mentors, as leaders of a learning experience, certainly need to share their “how to do it so it comes out right” stories. They also need to share their experiences of failure or their “how I did it wrong” stories. Both types of stories are powerful lessons that provide valuable opportunities for analyzing individual and organizational realities. The significant growth previously mentioned in organizational

mentoring programs has also brought about some changes in how organizations and people should view mentoring. There are two essential ideas that should be foundational within an organization's mentoring program. First, everyone needs a mentor. Even employees high within the organizational structure can benefit and learn from a mentor. A good mentor is anyone you can learn from which clearly complements the first essential building block to a solid mentoring program. An organization that builds its mentoring program on these fundamental ideas in a culture enriched with people willing to help one another will see positive results. Successful mentoring programs yield greater sharing of tacit knowledge which is the most difficult task involved in tacit KM.

Another way to increase sharing of tacit knowledge is through storytelling. "Humans have been telling stories as not only a form of entertainment, but as a way to make sense of the world for a very long time—probably almost as long as they have had language. So it is not a surprise that we continue to use this powerful medium in the corporate environment" (Reamy, 2002, p. 2). While storytelling is a proven method for transferring tacit knowledge, it is not as widely incorporated into KM as the mentoring process. One key reason for why storytelling does support sharing of tacit knowledge is that "stories...support chunking of facts and events in a ways that correspond to how our brains are designed for both paying attention and for remembering" (Reamy, 2002, p. 3). Organizations need to accept storytelling as a transfer mechanism for tacit knowledge. Stories are told everyday within organizations whether it's in a formalized process or not, and stories will continue to be told. The key for organizations to build competitive advantage from storytelling is for the organization to understand not only the activity and nature of storytelling, but also the stories that are being told. If an organization is oblivious to the stories being told within their enterprise, then it is clear that there is no support for transmission of tacit knowledge through stories. The organization could also warp the use of stories within their environment. In essence, storytelling is a positive method that all organizations should formalize and employ.

Formalization of storytelling is most easily done within the context of KM, which gives this process "a framework of legitimacy" (Reamy, 2002, p. 4). To successfully create an environment or architecture that supports storytelling, we must first understand how stories can and are used within the corporate world. One of the most basic ways that stories are used is in informal education and training. "[Stories]...are not particularly good at transmitting the details and low level procedures that new employees need to learn, but once that basic context is learned, stories provide guidance and lessons in the advanced or more sophisticated application of those basics" (Reamy, 2002, p. 6). In other words, standard training tends to impart information, while the training embedded in stories tends to impart knowledge. Stories also form the foundation for many communities within the corporate environment. "The act of sharing stories creates the knowledge flow that makes a community alive and valuable"

(Reamy, 2002, p. 6). Stories also act as a medium to imparting new ideas on employees within an organization. People react differently to stories as compared to charts and logical arguments. There are certainly more ways that stories can be utilized within an organization, however, the aforementioned ways are easily the most widely implemented today. Given a clear understanding of how stories are used, the next step in formalizing the storytelling process is determining how to capture and document these stories. The capturing of these stories will yield an even greater transfer of tacit knowledge within the organization. As with any formalized process within an organization, there needs to be a group responsible for storytelling. This group would be responsible for “maintaining a library of stories, teaching story skills, publicizing the role of the story library and facilitating the story capture process” (Reamy, 2002, p. 3). Without the implementation of this group or department within an organization, it would nearly impossible to reap benefits from storytelling. The content of the stories captured should be represented in a variety of ways. “People will tell stories for hours, but ask them to write them down and 15 minutes seem very long” (Reamy, 2002, p. 3). This is a fact that a formal storytelling program will need to effectively handle. In today’s world of technology, multimedia will play a huge role in successful capture and replay of stories. Once stories are successfully captured, employees must be able to retrieve these stories for use at a later time. Therefore, a reference or indexing system needs to be developed based on metadata associated with a particular story. Organizations that can understand the use of stories, capture these stories, and reference these stories as needed have a successful and formal storytelling program.

## **SECTION 4: KNOWLEDGE MANAGEMENT MEASUREMENTS**

### **BENEFITS OF KNOWLEDGE MANAGEMENT**

Effective management of both tacit and explicit knowledge can provide excellent returns for an organization. Information extracted from knowledge management efforts has the potential to provide an array of benefits including enhanced decision making, improved process management and issue resolution and expanded employee performance. Benefits can vary as greatly as the knowledge management strategies employed by different organizations.

The effective organization of explicit knowledge enables better strategic decision making within a company by enabling decision makers to access data from all areas within the organization. By combining the process of gathering this information with the tools that enable efficient organization and retrieval organizations are able to provide decision makers with large amounts of relevant information. One respondent to our survey identified the company’s decision support environment as a key component of the company’s overall knowledge management strategy. This system is used to enhance employees’ decision making abilities on pricing, forecasting, sales organization and the development of marketing

programs. Additionally, system aided in the organization's shift from intuitive to fact based decision making in these areas.

In addition to improving decision making knowledge management can allow provide benefits in the process management and issue resolution areas. RS Information Systems integrated a knowledge management strategy to build a system to improve developing customer proposals. This system has improved overall employee efficiency and quality of the process by "facilitating the near-real-time sharing of industry-standard best practices among RSIS projects nationwide" (Frey, 2002, p. 173). Similarly, a software consulting firm included in our survey has recognized benefits from knowledge management in the area of process management. This firm's knowledge management initiatives have enabled the re-use of internal products for multiple consulting engagement including project deliverables, templates and utilities. These benefits save time and money for organizations while allowing them to improve the products and services delivered to the customer.

Another important benefit of integrating a knowledge management strategy is expanded employee performance. Improved employee performance not only benefit individual employees but the overall company as well. Organizations that are knowledge focused normally have an environment that is conducive to the sharing of information among employees. Employees are able to communicate effectively and openly while sharing both explicit and tacit knowledge. Effective organization of this information enables employees to effectively utilize it to improve work performance. This also helps to reduce the amount of tacit knowledge unique to individuals which is a risk for many organizations. "Employee turnover translates into lost value to the firm with respect to tacit knowledge unless that knowledge has been previously captured through new product development, process improvements or transmission of employees' know how to others with whom the employee has worked" (Droege & Hoobler, 2003, p. 61). The transfer of this knowledge enables employees to become more flexible and less specialist in a particular area increasing opportunities for both employees and employers. As employees begin to recognize the benefits of participating in knowledge management efforts like mentoring programs or the creation of knowledge participation becomes more frequent and the overall benefit to the organization increases.

### **COSTS OF KNOWLEDGE MANAGEMENT**

These vast benefits an organization can obtain from the implementation of a knowledge management strategy do not come without costs. Although knowledge management efforts are often company-wide, information technology systems and professionals, often play a vital role in the enablement of the transfer of knowledge. Direct costs associated with knowledge management include these systems; the

time employees spend on knowledge management efforts and the organizational infrastructure necessary to support a strong knowledge-oriented environment.

Many organizations depend on information systems for the collection, organization and access of explicit knowledge. Tools used for knowledge management may include intranet portals, data warehousing and mining tools, email services, groupware products. They can be as simple as custom intranet applications or as sophisticated as commercial off the shelf products designed specifically for the management of explicit knowledge. The data managed by these tools is often time normalized and stored in knowledge repositories which are made available to others within the organization. Costs associated with these systems include maintenance, training and validation procedures to ensure data currency and validity. The decision support environment at a manufacturing company in St. Louis requires an annual investment in information technology resources in excess of \$1 million. This system is used to increase the organization's competitive advantage by support pricing, forecasting, sales organization and the development of marketing programs. Information technology systems also are used to support tacit knowledge transfer. Web collaboration and videoconferencing systems are often used to emulate the face-to-face environment that is typically used for knowledge management practices such as mentoring and peer reviews.

Another significant cost factor in creating and maintaining a knowledge management strategy is the time employees spend on knowledge management. The repositories of information and more diverse employees that are created from effective knowledge management take time to develop. In the article, "Why Three Heads are Better Than One( How to Create a Know-It-All Company)", Lauren Gibbons Paul states, "the effort of sharing knowledge has to be less than the value of participating" (Paul, 2003, p. 95). Knowledge management may not be beneficial to an organization if the costs of gathering and retrieving the information are greater than the benefit it provides. This cost can be somewhat mitigated through the use of technology that allow for easy entry and retrieval of information. Paul's article includes an example of Giant Eagle grocery retailer's knowledge management strategy. The retailer wanted to share best sales practices among stores but needed to implement a system that was easy to use and provided quick input and output capabilities. By implementing a web-based portal system, KnowAsis, employees were able to easily integrate this practice into their existing workload and help generate revenues for the organization.

A final cost associated with knowledge management is the costs associated with the creation of an organizational infrastructure and culture that enables the transfer of knowledge. Large organizations with company-wide knowledge management strategies often have an entire team responsible for overseeing explicit knowledge management systems and programs for the transfer of tacit knowledge.

Costs of employing these champions such as CKOs may drastically increase a company's investment in knowledge management but potentially can increase overall cohesiveness of efforts and employee participation. Additionally, in order to reduce the risk of failure, a company must create an environment that is conducive to the sharing of information among peers and teams within the organization. Costs may be incurred in the time needed to create an environment with strong communication and recognition for sharing knowledge. Employees must recognize benefits from participating in these programs and not feel threatened by providing information that could otherwise provide a sense of security.

### **MEASUREMENT OF KNOWLEDGE MANAGEMENT EFFECTIVENESS**

The costs and benefits of knowledge management are not always easily measured in economic terms. Companies may gain greater process and employee efficiencies, reduce risks of tacit knowledge only known to individuals and enable better decision making by providing more structured information. The costs are often not isolated to knowledge management tools alone and time spent on knowledge management efforts is hard to measure. Two of our survey respondents stated that either the organization or individual teams did not necessarily have an official knowledge management strategy yet they were employing several of the tools and practices used to extract and organize information.

Although the actual costs or benefits are not easily measured the effectiveness of a knowledge management system can be appreciated by the organization and the users of the system. In our survey one organization measured the effectiveness of their decision support environment by the number of users who access the information within the system. Similarly, a St. Louis consulting firm measures the effectiveness by surveying the users of the information. This allows companies to ensure that the data extracted and stored in knowledge-based systems is both current and relevant.

Another measure of effectiveness is to measure improvements in processes that utilize information provided by knowledge management systems. The RSIS case demonstrates improvements in both the process of generating proposals for customers as well as customer service by consolidating best practices and product solutions throughout the entire organization. Additionally, by using knowledge management, a software consulting firm is able to reuse processes and documents when implementing similar solutions for multiple clients.

### **SECTION 5: WHERE IS KM HEADED?**

To answer this question, we need to try to identify what may become the accepted definition for KM. Smith and Sarquhar (2000) have proposed what we feel is a promising definition for KM: "To improve

organizational performance by enabling individuals to capture, share and apply their collective knowledge to make optimal decisions in real time.”

The keyword in this definition is “real time” and it illustrates the first trend we see in the future of KM. In today’s organizations, there are technologies that enable individuals to capture knowledge, there are technologies that enable individuals to share knowledge, and there are technologies that allow an organization to apply collective knowledge. But, to date, we have not found any technologies that will do all of these processes and also present a solution to a user who does not know what the question is. Although the field of data mining has made great strides in this area it does not operate in a real time environment. We project that artificial intelligence technologies will improve to the point that knowledge will be at the right place at the right time.

This brings us to the second trend that we see for the field of Knowledge Management: enterprise-wide integration. Many of the systems that have claimed to be KM solutions in the past are really “point solutions” (Coleman, 2002), not integrated business solutions. We project a rollup of these “point solutions” into an enterprise-wide KM system with benefits similar to those of ERP systems. This will result in better solutions that can be employed across the enterprise.

The third trend that we see is the importance of knowledge itself. Just as customer service replaced quality as the key differentiator in the 1990s, we agree with Smith and Farquhar (2000) that knowledge and adaptation will replace customer service. A company who knows how to disseminate and manage knowledge will be in a much better position to conduct business in the future marketplace.

## **SECTION 6: CONCLUSION**

The field of Knowledge Management is still in its early stage. There still exists much ambiguity in what is knowledge and knowledge management. However, knowledge has now emerged as the primary resource and most valuable asset in today’s business environment. Recent trends have shown that knowledge can be a source of sustainable competitive advantage and companies are now pushing to implement programs to create, share, and nurture knowledge sharing within their organization. As we have seen, one of the principles of KM is to facilitate the task of knowledge transfer. In order to generate value for the organization and/or facilitate innovation of new products or services, several factors are vital to the success of KM initiatives. Organizations need to institute a knowledge-friendly culture in order to promote trust among knowledge workers. They need to establish organizational structures for operational and symbolic reasons, secure the support of senior management, and institute effective motivational tools to encourage knowledge sharing.

While many of today's organizations recognize tacit knowledge as a source of competitive advantage, many are still learning how to effectively manage this resource. Tacit knowledge itself is an abstract concept, therefore, making it difficult for organizations to completely comprehend tacit knowledge, yet alone, successfully manage this knowledge. Two essential mechanisms that are helping organizations share tacit knowledge are mentoring and storytelling programs. Formalizing these programs is critical to successful implementation of tacit knowledge management.

Clearly, implementing a knowledge management strategy can result in an array of benefits for an organization including employee and process efficiencies. However, these benefits do not come without costs. Information systems play a vital role in facilitating the collection and retrieval of knowledge-based information. In addition to these systems, other costs include the time employees must spend on knowledge management efforts and the organizational changes that are needed to support knowledge management initiatives. Accurately measuring these costs and benefits can be difficult but organizations can measure the effectiveness of knowledge management efforts by the improvements in processes and employees that utilize the information generated from knowledge management efforts.

While researching Knowledge Management, we found one common theme among virtually all of our respondents. When asked about the future of KM, the answer almost always came back: Expansion. Whether it is expansion within different departments of the company, expansion of the knowledge collection, or expansions in funding, formalization and communication, none of our respondents anticipates any decline in KM activities. Although Knowledge Management is still in its fledgling stages, KM is here to stay and it will be a determining factor in the success of business in our future.

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**APPENDICES**

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## 1.0 RESEARCH PROPOSAL

### Abstract

This paper draws on primary and secondary data to discuss Knowledge Management and its implementation. As organizations become increasingly aware of the value of knowledge in today's competitive environment, knowledge management initiatives have also increased proportionally. For the purpose of this paper, knowledge is defined as "the process through which organizations generate value from their intellectual and knowledge-based assets" (Santosus & Surmacz, 2001). The primary purpose of the paper is to give a general presentation of the field of knowledge management and tacit knowledge in particular, identify some of the best practices in implementing and managing knowledge management programs, and describe how KM effectiveness can be measured. Information collected from a survey among several large companies of the St. Louis area is used to illustrate our discussion.

### Introduction

Knowledge management is the process through which organizations generate value from their intellectual and knowledge based assets. There are two types of knowledge: tacit and explicit. Tacit knowledge is that which is rooted in the human brain and is not easily expressed. Explicit defines knowledge that is easily codified. The process that is knowledge management contains three individualized steps: knowledge generation, knowledge codification, and knowledge transfer/realization. Knowledge generation involves the acquisition and development of knowledge. Codification converts knowledge into accessible and applicable formats. Transfer/realization is the movement of knowledge from its point of generation or codified form to the point of use. Another key concept with the realm of knowledge management is codification versus personalization. This is directly related to the distinction between knowledge, both tacit and explicit. Both codification and personalization expose an organization's primary approach to knowledge transfer. Companies using codification approaches rely primarily on repositories of explicit knowledge. Personalization approaches imply that the primary mode of knowledge transfer is direct interaction among people. While technology can provide assistance in knowledge management, it is vital to understand that successful knowledge management involves developing knowledge-oriented cultures, motivating individuals to share and use knowledge, and encouraging workers to view their jobs in terms of effective knowledge management.

### Research Plan

Our initial research will involve 2 major sources of information:

1. Surveys and follow up interviews with KM leaders in the St. Louis area
2. Internet-based and journal sources for detailed info on KM

Our research will explore St. Louis based organizations views and practices regarding knowledge management.

Key Topics:

- 1) The definition of Knowledge Management
- 2) Tacit knowledge management
- 3) The current structure of KM departments at major companies
- 4) Where Knowledge Management is going in the future

The above topics within knowledge management will be researched in great detail. Most of our research will be primary including surveys and follow up interviews. Some secondary research will be conducted to help support our primary research. Initial surveys will be distributed to all participating St. Louis

organizations. After these surveys are returned and analyzed, follow up interviews will be conducted with chosen organizations. These surveys will help us to concentrate our research efforts.

Although our study will be both quantitative and qualitative, if we use primary data it will be mostly quantitative.

If the survey leads bad data, we will do our research with secondary data and change the focus of our study towards analyzing the field of KM (the state of the field, best practices, tools, and the future of KM)

### **Conclusion**

1. We are going to give our definition of KM.
2. Tell where KM is at this point in time in major corporations.
3. We will give our opinions on where KM is leading.

### **References**

## 2.0 SURVEY

### KNOWLEDGE MANAGEMENT SURVEY

This survey was adapted from the following sources: Vincent Ribière, KM Survey, 2003 and KPMG KM Research Report 2000 cited in Vincent Ribière, KM Survey, 2003.

#### RESPONDENT INFORMATION

Name: \_\_\_\_\_

Title: \_\_\_\_\_

#### COMPANY INFORMATION

Company: \_\_\_\_\_

Annual Revenues:     <25M     25-250M     >250M

Number of Employees:     <100     100-999     1,000-10,000     >10,000

Average time employee remains in the same position? \_\_\_\_\_

Do you currently have a KM Program?     Yes     No

Do you currently have a KM department?     Yes     No

Name the top 3 employees responsible for KM and list their titles?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### KNOWLEDGE MANAGEMENT DEFINITION

We are defining knowledge management as "*the process through which organizations generate value from their intellectual and knowledge based assets.*"<sup>1</sup> Does this definition encompass the definition of knowledge management within your organization?     Yes     No

If no, please provide a brief description of knowledge management in terms of your organization:

\_\_\_\_\_

#### KNOWLEDGE MANAGEMENT STRUCTURE

1. Do you have a KM vision/mission/strategy?     Yes     No

If yes, explain \_\_\_\_\_

2. At what stage is your current KM program?

A. Up and running     Yes     No

<sup>1</sup> Santosus, M., Surmacz, J.; "ABC's of Knowledge Management"; CIO.com; Article can be found at <http://www.cio.com/research/knowledge/edit/kmabcs.html>; viewed on March 19, 2004.

- B. In the implementation process  Yes  No
- C. Requirements determination  Yes  No
- D. Thinking about it  Yes  No
- E. Other(s) \_\_\_\_\_
3. How did your KM program come into place?
- Implementation of a specifically designed KM program
- Various initiatives at the department level that have come together to form a program
4. Are KM strategies employed company-wide or only within individual departments?
- Company Wide  Individual Departments
- A. If company wide, is the definition of KM the same among different departments?
- Yes  No
- B. Are tools for managing knowledge common between departments?
- Yes  No
5. Is there a formal department responsible for knowledge management?
- Yes  No
- If yes:
- A. How many employees are dedicated only to knowledge management?
- B. What functions does this department provide? \_\_\_\_\_
6. Which departments are required to adopt KM initiatives? \_\_\_\_\_
7. How long has your company had official KM policies? \_\_\_\_\_
8. How has knowledge management helped your organization? \_\_\_\_\_
9. What were the reasons for initiating KM strategies/program? \_\_\_\_\_
10. In your opinion, are your KM initiatives successful?  Yes  No
11. Has the KM process helped your company with:
- A. Decision making  Yes  No
- B. Better customer service  Yes  No
- C. Better response to change  Yes  No
- D. Improved employee skills  Yes  No
- E. Increased employee productivity  Yes  No
- F. Increased innovation  Yes  No
- G. Best practice sharing  Yes  No
- H. Creating additional business opportunities  Yes  No
- I. Other(s) \_\_\_\_\_
12. How do you measure the effectiveness of your KM initiatives? \_\_\_\_\_
13. Do you think that the resources and scope of the KM system will continue to expand?
- Yes  No

14. List the current shortfalls with your KM initiatives: \_\_\_\_\_

### KNOWLEDGE MANAGEMENT STRATEGIES

1. When solving problems, employees rely more on
  - Explicit Knowledge (knowledge that can be easily codified)
  - Tacit Knowledge (knowledge embedded in the human brain that cannot be expressed easily)
2. Does your company formally reward knowledge sharing?  Yes  No  
If yes, how? \_\_\_\_\_

### CODIFICATION

1. What tools are used to codify knowledge?
  - Document management systems
  - Issue tracking/database
  - Documentation policies
  - Process Management Tools
  - Other(s) \_\_\_\_\_
2. Do you utilize any of the following tools to further your KM initiatives?

<input type="checkbox"/> Corporate Intranet – Extranet – Internet	<input type="checkbox"/> Email – Listserv - Newsgroup
<input type="checkbox"/> Database Management System	<input type="checkbox"/> Data warehouses – Data marts
<input type="checkbox"/> Workflow and tracking system	<input type="checkbox"/> Web-based training – E-learning
<input type="checkbox"/> Data mining tools	<input type="checkbox"/> Groupware (e.g., Lotus Notes)
<input type="checkbox"/> Other(s) _____	
3. What is the structure of knowledge repositories?
  - Shared among individual departments
  - Organization-wide
  - Team-wide

### PERSONALIZATION

1. Do you have standard processes for transferring tacit knowledge between employees?
  - Yes  NoIf yes, are these programs used
  - A.  Within individual departments
  - B.  Among departments?
  - C.  Through mentoring programs

- a. Are the mentoring programs between employees
  - In the same role, or
  - In different roles
- D. Cross-training initiatives
  - a. Are the mentoring programs between employees
    - In the same role, or
    - In different roles
- E. Other tools used for person-to-person transfer of knowledge \_\_\_\_\_
- 2. Are individuals required to participate in knowledge management programs?  Yes  No
- A. Is it part of employee review process?  Yes  No

**FUTURE OF KNOWLEDGE MANAGEMENT**

1. Proposed changes to the knowledge management strategies? \_\_\_\_\_
2. How often are policies and practices reviewed? \_\_\_\_\_

### 3.0 FOLLOW-UP SURVEY

(This is a sample follow-up survey. All follow-up surveys were customized to collect as much information as was needed from specific companies).

#### KNOWLEDGE MANAGEMENT FOLLOW-UP SURVEY

1. In your survey you stated that KM helped with Decision Making, Productivity and Innovation. Can you give any examples of how KM helped in these areas?  
\_\_\_\_\_
2. Is there anything directly linked to KM that you track to measure the effectiveness of KM?  
\_\_\_\_\_
3. What was (were) the major goal(s) and purpose(s) with implementing a KM program?  
 Capturing specialist knowledge                       Mapping the organization knowledge  
 Producing revenue streams                               Creating knowledge communities  
 Increasing competitive advantage                       Increasing performance and management of business processes
4. Do you consider organizational culture and physical space important elements of implementing a KM program?  
 Yes  No – please explain your answer \_\_\_\_\_
5. Role of senior management:  
 Initiated KM program                       Supportive of KM program but did not initiated  
 Not supportive of KM program                       Have a laissez-faire attitude without involvement
6. When did your company started KM initiatives? \_\_\_\_\_
7. Can you explain the levels at which you recognize knowledge sharing?  
\_\_\_\_\_
8. Can you explain the reward system currently in place to reward knowledge sharing and detail the various levels of recognition?  
\_\_\_\_\_
9. What costs are associated with your knowledge management program?  
\_\_\_\_\_
10. How do you measure the success and benefits of your knowledge management program?  
\_\_\_\_\_
11. Can you share some of the roadblocks you have encountered implementing KM.  
\_\_\_\_\_
12. If you could change one thing about your KM program what would it be?  
\_\_\_\_\_
13. Where do you see your KM program in 5 years?  
\_\_\_\_\_

## 4.0 SURVEY RESULTS

### Data collection

Data was collected through a formal survey sent to six companies located in the St. Louis area. The survey was divided into seven large sections requesting information about the company profile, definition of knowledge, KM structures, KM strategies, codification of knowledge, personalization of knowledge, and future plans regarding KM initiatives. Responses were received from five companies. A follow up survey was sent to four of the five companies and three were returned. Due to the limited number of surveys collected, the information received was mostly used to verify and illustrate some of the findings from our research.

Since anonymity was promised to our respondents, the companies have been represented by an alphabetical character. All the companies surveyed were local organizations similar in size and revenues. The table below summarizes the companies' profiles:

**Table 1 – Companies' Profile**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Annual Revenues:	>250M	>250M	>250M	>250M	>250M
Number of Employees:	1,000-10,000	1,000-10,000	>10,000	>10,000	>10,000

### Analysis

Although four companies out of the five companies that responded to our survey agreed with our definition of knowledge management, one of them did not. According to that company, our definition was "vague and not specific enough." As stated previously, we defined knowledge management as "the process through which organizations generate value from their intellectual and knowledge based assets" (Santodus & Surmacz, 2001). We believe that the confusion lies not only in the numerous definitions of knowledge and knowledge management, but also in the fact that organizations have been implementing various aspects of KM efforts for many years and that some of these organizations do not recognize these efforts as part of a KM initiative. However, as our research showed, there are currently a trend within organizations to pull these initiatives together to create company-wide KM programs – three out of the 5 respondents were in this situation. Furthermore, the company agreed that according to the questions asked in our survey, they did "have many management efforts" in their organization. Thus, although they did not agree with our knowledge management definition, they did acknowledge having KM efforts within their organization. Table 2 aggregates information about the KM programs within the organizations surveyed.

**Table 2 – KM Program Profile**

	<u>Yes</u>	<u>/Total Responses</u>
Agree with our definition?	4	/5
Have a KM vision?	2	/5
Have a KM program?	4	/5*
Have a KM department?	1	/5
Have one department responsible for KM?	2	/5
Implemented company-wide?	3	/5
Implemented at the individual department level?	2	/5
Have same definition among departments?	2	/5
Have common tools between departments?	2	/5
Require participation?	2	/5
Part of employee review process?	2	/5
Part of reward system?	4	/5

\* The fifth company did agree that, according to our survey, they had many KM efforts in their organization, although they did not necessarily consider these efforts as KM programs.

The companies surveyed were at different stages of implementation of their KM programs. Two companies had “up and running” KM programs (three if we include the company with KM efforts), one was in the “implementation process”, and one was “thinking about it.” Only two out of the five companies surveyed declared having a KM vision for the whole organization. One vision included statements such as implementing a “centralized repository”, “all items extracted are expected to be rated for quality and applicability”, and “participants [are] strongly encouraged to contribute IP [Intellectual Property]”. The other encouraged “groups [to] provide value through our ‘knowledge based assets’”, to participate in “ongoing data warehouse activity in sales, operations, finance, and manufacturing”, stating that “each has its own strategy and provides value to the business.” Although creating an organizational KM vision is not necessary when implementing individual initiatives at the department level, it becomes absolutely vital when KM programs are implemented at the organization level. A KM vision can help with establishing the organizational culture necessary to a successful KM initiatives, especially in the case of tacit knowledge which requires a high level of trust and socialization.

Companies stated the following reasons for starting KM programs: “Too many ‘silo’ applications”, “[establishing] corporate visibility across all business unit data”, “re-use and knowledge dissemination”, “standardization”. These reasons correlate the type of knowledge that was targeted. Companies focusing on tacit knowledge were more concerned with the integration of various redundant systems and applications, the dissemination of knowledge in order to reduce costs, efforts, and time spent re-doing work that had already been done in other units of the same organization. Companies focusing on explicit knowledge were concerned with their ability to standardize data and re-use knowledge through the use of data repositories, as well as increasing the performance and management of business processes.

According to our survey, two of the five companies indicated that they had KM initiatives geared towards tacit and explicit knowledge, two were only concerned with tacit knowledge, and one only focused on explicit knowledge. However, in order to collect specific information about the companies' strategies regarding explicit and tacit knowledge, questions were asked about their practices of the codification and personalization of knowledge. From the responses received, it appears that all companies actually have explicit knowledge codification practices. Table 3 and 4 summarizes the results of these questions in order of frequency of appearance within organizations.

**Table 3 – Codification (transfer of explicit knowledge)**

	<b>Yes</b>	<b>/Total responses</b>
<i>Have tools to codify explicit knowledge?</i>	4	/5
Documentation policies?	4	/5
Issue tracking database?	3	/5
Process management tools?	3	/5
Document managing systems?	2	/5
Repositories of unsupported tools/utilities	1	/5
Reference data systems (customer master, product master, etc)	1	/5
<i>Have tools to further KM initiatives?</i>	5	/5
Web-based training, E-learning	4	/5
Email-listserv-newsgroup	4	/5
Corporate Intranet-Extranet-Internet	3	/5
Data mining tools	3	/5
DBMS	2	/5
Data Warehouse, Data marts	2	/5
Groupware	2	/5
Workflow and tracking system	1	/5
Document and Web content management system	1	/5
<i>Have a structure for knowledge repository?</i>	5	/5
Organization-wide?	5	/5
Shared among individual departments?	3	/5
Team-wide	2	/5

**Table 4 – Personalization (transfer of tacit knowledge)**

	<b>Yes</b>	<b>/Total responses</b>
Have processes to transfer tacit knowledge?	3	/3*
At the individual department level?	3	/3
Have mentoring program?	2	/3
Employees in the same role?	2	/3
Employees in different roles?	0	/3
Have cross-training program?	2	/3
Employees in the same role?	2	/3
Employees in different roles?	1	/3

\* Refers to the three companies with tacit knowledge initiatives.

Table 5 summarizes the effects that KM programs had on the companies surveyed. Only three of the companies responded to these questions – one indicated that it was too early to be determined and the other did not respond.

**Table 5 – KM Effects on Organization**

	<b>Yes</b>	<b>/Total Responses</b>
Better Decision Making	3	/5
Increased innovation	3	/5
Best practice sharing	3	/5
Better customer service	2	/5
Better response to change	2	/5
Improved employee skills	2	/5
Increased employee productivity	2	/5
Creating additional business opportunities	2	/5

Except from the company who did not agree to having a formal KM program, all other organizations indicated that the resources and scope of their KM system will continue to expand in the future.