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Can a Community of Practice be established at Org X?

Kasturi Golla
University of Nebraska at Omaha

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Can a Community of Practice be established at Org X?

“Knowledge involves the head, the heart, and the hand; inquiry, interactions, and craft. Like a community, it involves identity, relationships, and competence; meaningfulness, belonging, and action.”

A Thesis

Presented to the

Department of Information Systems and Quantitative Analysis

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

University of Nebraska at Omaha

by

Kasturi Golla

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THESIS ACCEPTANCE

Acceptance for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the Requirements for the degree Master of Science, University of Nebraska at Omaha.

Committee

Dr. Gert-Jan De Vreede

Dr. Sid Davis

Dr. Jeremy Lipschultz

Dr. George Royce (ex-officio)

Chairperson

Date: 23 September 2005
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To all my friends at the Graduate Studies Office, thank you for all the encouragement, love, and support.

Finally, to my friends and family, I wouldn’t be where I am today, if it weren’t for your love and support.
Can a Community of Practice be established at Org X?

Kasturi Golla, M.S.

University of Nebraska, 2005

Advisor: Dr. Gert-Jan De Vreede

Communities of Practice (CoP’s) can preserve the knowledge of an organization by pooling together individuals who share the same goals and are determined to build their level of knowledge through ‘innovative interaction’(Wenger, 1998). CoP’s help organizations pool together their knowledge of value, keeping in mind the organization’s business processes.

This study was conducted in order to establish a CoP in the I/S department at Org X, by first identifying knowledge sharing barriers and the measures that could be taken to eliminate these barriers. This research is aimed at answering three primary questions:

1. What are the barriers that prevent employees from participating in the knowledge sharing process?
2. What measures can be taken to overcome these barriers?
3. Can a community of practice be established if these barriers are overcome?

The main knowledge sharing barriers that were identified were:

- Lack of interest
- Personal inhibitions
- Lack of time
- Lack of perceived knowledge value
- Non-conducive company culture
Several measures were put into place to encourage knowledge sharing. At the time of the study there was talk to put into place additional measures to encourage knowledge sharing. Since, these measures were not put into place at the time of this study, the effect that they would have on the knowledge sharing participation levels cannot be anticipated.

In spite of having several knowledge sharing measures in place, the level of participation was observed to be very minimal. It was observed that this ‘gap’ in knowledge sharing can be attributed in large part to the corporate culture.

Future research could focus on the identifying the specific impacts of corporate culture on the level of knowledge sharing. In addition, if a CoP were established at the I/S department at Org X, then the growth of the community should be closely monitored and documented to see if it was legitimized (recognized by the management/organization), supported (provided with resources), and institutionalized (given much importance in the I/S department’s decision making process) as was inferred at the time of the study.
TABLE OF CONTENTS

1. INTRODUCTION ........................................................................................................................................................... 1
   1.2 RESEARCH METHODS USED ............................................................................................................................................... 2
   1.3 PROBLEM STATEMENT .......................................................................................................................................................... 2
   1.4 OBJECTIVE OF THE RESEARCH ........................................................................................................................................... 3
      1.4.1 Practical objective of the research .................................................................................................................................. 3
      1.4.2 Academic objective ......................................................................................................................................................... 3
   1.5 DEMARCATION OF THE RESEARCH ..................................................................................................................................... 5
   1.6 CONTENTS OF THE REPORT .................................................................................................................................................. 4

2. PREVIOUS RESEARCH ............................................................................................................................................................. 5
   2.1 LEARNING IN ORGANIZATIONS ........................................................................................................................................... 5
   2.2 COMMUNITIES OF PRACTICE .................................................................................................................................................. 6
   2.3 KNOWLEDGE IN ORGANIZATIONS ......................................................................................................................................... 8
   2.4 KNOWLEDGE MANAGEMENT ................................................................................................................................................... 11
   2.5 COMMUNITIES OF PRACTICE IN ORGANIZATIONS .................................................................................................................. 12
      2.5.1 Belonging to a Community ............................................................................................................................................... 17
      2.5.2 Participation in Communities of Practice ............................................................................................................................... 18
      2.5.3 The various forms of Communities of Practice ...................................................................................................................... 21
      2.5.4 Designing a Community of Practice .................................................................................................................................. 22
      2.5.5 Downfalls of a Community ................................................................................................................................................. 28

3. THE RESEARCH DESIGN ............................................................................................................................................................ 29
   3.1 RESEARCH INSTRUMENTS .................................................................................................................................................... 29
      3.1.1 Personal Interviews ......................................................................................................................................................... 29
      3.1.2 Facilitation Session ............................................................................................................................................................ 30
      3.1.3 Surveys ................................................................................................................................................................................ 31
      3.1.4 I/S Forums ........................................................................................................................................................................... 32
   3.2 THE RESEARCH PROCESS ..................................................................................................................................................... 32
   3.3 THE RESEARCH MODEL ......................................................................................................................................................... 33

4. KNOWLEDGE SHARING AT ORG X .............................................................................................................................................. 39
   4.1 DEVELOPMENT FORUMS .................................................................................................................................................... 39
   4.2 TECHNOLOGY EXCHANGES ................................................................................................................................................. 39
   4.3 MONTHLY NEWSLETTER ...................................................................................................................................................... 40
   4.4 I/S WEBSITE ......................................................................................................................................................................... 41

5. THE RESEARCH ANALYSIS ........................................................................................................................................................ 42
   5.1 RESEARCH QUESTION #1 ..................................................................................................................................................... 43
   5.2 RESEARCH QUESTION #2 ..................................................................................................................................................... 44
   5.3 RESEARCH QUESTION #3 ..................................................................................................................................................... 48

6. DISCUSSION ............................................................................................................................................................................. 51
   6.1 RESEARCH OVERVIEW ...................................................................................................................................................... 51
   6.2 KEY FINDINGS ...................................................................................................................................................................... 52
   6.3 RESEARCH CONTRIBUTIONS ................................................................................................................................................. 53
   6.4 LIMITATIONS OF THE STUDY ................................................................................................................................................ 53
   6.5 FUTURE RESEARCH ........................................................................................................................................................... 54
LIST OF FIGURES

Figure 1: Communities of Practice ........................................................................................................ 7
Figure 2: SECI Model ............................................................................................................................ 10
Figure 3: SOC Model ............................................................................................................................ 17
Figure 4: SOVC Model .......................................................................................................................... 18
Figure 5: Double-knit Organization Knowledge Model ......................................................................... 21
Figure 6: Research Process ................................................................................................................. 33
Figure 7: Research Model .................................................................................................................. 36
Figure 8: Research Model Inferences .................................................................................................. 37
Figure 9: Tech Exchange Page on I/S Website .................................................................................... 40
Figure 10: I/S Homepage .................................................................................................................... 41
Figure 11: Java Forum .......................................................................................................................... 69
LIST OF TABLES

Table 1: CoP vs other organizational teams/groups .......................................................... 14
Table 2: Survey responses .................................................................................................. 68
1. INTRODUCTION

Today many organizations are taking their business overseas. Companies are competing with each other on a global level. “Companies are not just competing for market share; they are competing for talent- for people with the expertise and capabilities to generate and implement innovative ideas” (Wenger, 1998). With an increase in organizational competitiveness, both at a local and global level, it becomes important for companies to harbor their knowledge efficiently to gain a competitive edge.

Communities of practice (CoP’s) can preserve the knowledge of an organization by pooling together individuals who share the same goals and are determined to build their level of knowledge through ‘innovative interaction’ (Wenger, 1998). CoP’s help organizations pool together their knowledge of value, keeping in mind the organization’s business processes. A CoP can provide its members knowledge in either explicit or tacit form. CoP’s provide tacit knowledge in the form of conversations, storytelling, coaching, etc., and explicit knowledge in the form of manuals, project documentation, etc. For example, in one community, each of its members was required to take turns to attend conferences related to their areas of interest. Each member had to report the highlights of the conference back to the group (Wenger, 1998).

Many well know companies have incorporated CoP’s into their every day business. McKinsey is known as a premier strategy-consulting company. However, to develop its own strategy, McKinsey relies heavily on CoP’s. “When highly developed, influential CoP’s keep abreast of market opportunities as well as their own practice development, they can inform or enact new strategic initiatives” (Wenger, 1998).

Given the value that CoP’s can add to a corporation, this thesis hopes to establish a CoP in the Information Technology (I/T) department at Org X, one of the largest insurance companies in the mid-west region of the United States. At present there are several means of knowledge
sharing established at Org X. These include on-line forums, newsletters, a website, etc.
However, it has been recognized that despite the various means of knowledge sharing available, participation in the process is very limited. It is the intention of this thesis to understand and identify possible hurdles that exist in the organization that might prevent active participation in the knowledge sharing process. This thesis aims to establish a formal CoP to assist Org X employees’ share and keep track of knowledge that can assist them in their daily activities. This community of knowledge should add value to each Org X associate.

1.2 Research Methods Used
This research includes the use of personal interviews, survey’s, and a facilitation session. Further information about the different methods that were used to collect data for this research will be discussed in chapter 3 of this report.

1.3 Problem statement
With an increase in organizational competitiveness, both at a local and global level, it becomes important for companies to manage their knowledge efficiently and gain value from it.
“Communities of practice are in the best position to codify knowledge, because they can combine its tacit and explicit aspects (Wenger, 1998). Organizations should establish CoP’s to efficiently share and manage their knowledge and as a result add value to each of their members. In this case, establishing a CoP in the I/T department at Org X is very beneficial not only to the company, but to each associate. So, the research questions are,

1. What are the barriers that prevent employees from participating in the knowledge sharing process?
2. What measures can be taken to overcome these barriers?
3. Can a community of practice be established if these barriers are overcome?
1.4 Objective of the research
The objective of this research is to identify hurdles that exist at Org X with regards to knowledge sharing and leveraging these hurdles in order to establish a CoP.

1.4.1 Practical objective of the research
The practical objective of this research is to establish a CoP at Org X that will allow its members to share knowledge that will add value to their jobs. This research is aimed at identifying hurdles in the present knowledge sharing process at Org X and using this information to establish a CoP.

1.4.2 Academic objective
The academic objective of this research is to understand and identify possible barriers that hinder successful knowledge sharing at Org X. This research is aimed at finding out if the identified knowledge sharing barriers can be overcome in order to establish a CoP. This research aims to contribute to the wealthy collection of literature regarding CoP’s in the following areas:
- Highlight ways in which barriers to knowledge sharing can be identified
- Identify measures to eliminate the identified barriers
- Explain why the level of knowledge sharing remains “minimal”, in spite of putting into place measures to eliminate the identified barriers.

1.5 Demarcation of the research
The research for this study has been limited to the I/T department at Org X. The intent was to first identify if a CoP could be established in this department and then, depending on management consent, attempt to replicate this process across other Org X departments. By the end of this study, all the solutions that were recommended to overcome the knowledge sharing
barriers were not put into place, hence it cannot be said with absolute certainty if a CoP could be established in the I/T department at Org X. However, further research on changes to the level of knowledge sharing and participation in knowledge sharing activities could very well lead to the establishment of a CoP in the I/T department at Org X.

1.6 Contents of the report
This research work is divided into 7 chapters. Chapter 2 provides an overview of research related to CoP’s and knowledge management. Chapter 3 provides a detailed description of the research design and the research methods used for the study. Chapter 4 provides information about the various knowledge sharing avenues that exist at Org X. Chapter 5 provides an analysis of the data, by answering the three research questions identified in chapter 1. Chapter 6 includes discussions and insights about the findings. Chapter 7 provides a wrap-up of the research work.
2. PREVIOUS RESEARCH

This chapter will provide an overview of the relevant research that has been conducted in the areas of CoP’s and knowledge management.

2.1 Learning in Organizations

Organizations comprise of individuals each having varied experience and backgrounds. In most organizations, individuals belong to a specific group that they relate to. Their activities are mainly restricted to the goal of the group. In some cases though, individuals belong to more than one group at any given time, or interact with one of more groups in order to complete a given task. For example, individuals in a programming team will need to interact with individuals in the design team or individuals in the testing team in order to successfully develop an application, or a module in an application. There is a certain degree of learning associated with the various forms of interaction that takes place in an organization. From an IT perspective, when a programmer interacts with a designer, the programmer learns more about the system requirements; what the client expects from the system, the features of the system, etc. Irrespective of whether the interaction takes place through formal methods such as project documentation reports, user requirements documents, or interview transcripts, or informal methods such as a discussions over lunch or coffee, there is a significant degree of learning that takes place.

Several different perspectives have been taken in regards to understanding what learning truly comprises of. Lave and Wenger provide food for thought with regards to how one can think of learning. ”One way to think of learning is as the historical production, transformation, and change of persons. As an aspect of social practice, learning involves the whole person, it implies not only a relation to specific activities, but a relation to social communities- it implies becoming a full participant, a member, a kind of person. In this view, learning only partly and often
incidentally implies becoming able to be involved in new activities, to perform new tasks and functions, to master new understandings” (Lave & Wenger, 1991). Learning can take its shape in several forms. “For individuals, it means that learning is an issue of engaging in and contributing to the practices of their communities. For communities, it means that learning is an issue of refining their practice and ensuring new generations of members. For organizations, it means that learning is an issue of sustaining the interconnected CoP’s through which an organization knows what it knows and thus becomes effective and valuable as an organization” (Wenger, 1998). How we perceive learning influences what we do when we decide that something must be done with regards to an issue related to either individuals, communities, or the organization as a whole (Wenger, 1998).

2.2 Communities of Practice

Learning has given rise to a concept that has been formally termed as 'Community of Practice' (CoP). CoP’s are not a new concept; they have been around for centuries; however, only in the last few years has the concept been recognized and formally studied. Cavemen gathered around a fire, discussing strategies to kill prey and which roots were edible formed an informal CoP. CoP’s are all around us, and all of us belong to a number of them, be it at work, at school, etc. However, some communities are formally recognized, whereas several of them are invisible. Some have names, and some don’t (Wenger, 1998). The true challenge lies in recognizing if a CoP exists or not.

A CoP is comprised of three different elements, namely domain, community, and practice.
The *domain* defines the set of issues that are of interest to the community. Knowing the domain inspires members to contribute and participate in the community; decide what is worth sharing, decide how to present their ideas, and which ideas to pursue (Wenger, 1998). The *community* aspect of a CoP instills a feeling of belonging among all the members in the community. The *practice* aspect of a CoP comprises of all the ideas, tools, stories, documents, etc, that are shared by the community members. Whereas the domain emphasizes the area that the community focuses on, the practice describes the knowledge that the community shares. Some communities have specific processes in place regarding the knowledge that is contributed. For example, at Xerox, any tip contributed to the technician database has the name of the contributor associated with the comment(s) (Wenger, 1998).

CoP's are groups of individuals who share a concern, a set of problems, or just have a passion about a certain topic(s). These individuals deepen their knowledge in a particular area, through the process of constant interaction. A CoP comprises of knowledge that will add value to each individual participant in the community, and eventually to the organization as a whole. "The knowledge of experts is an accumulation of experience – a kind of “residue” of their actions, thinking, and conversations- that remain a dynamic part of their ongoing experience. This type of knowledge is much more a living process than a static body of information. CoP's do not
reduce knowledge to an object. They make it an integral part of their activities and interaction, and they serve as a living repository of that knowledge” (Wenger, 1998).

Individuals in a CoP do not necessarily work together. However, they meet on a regular basis, because they are able to identify value in their interactions. During interaction, these individuals share information, insight, and advice. Members of the community explore ideas or discuss common issues. They may go about the process of sharing knowledge through formal means, such as developing tools, standards, manuals, or documentation procedure, or they may develop a tacit, less formal means of exchanging knowledge/information (Wenger, 1998). CoP’s are not self-contained entities. They develop in larger contexts- historical, social, cultural, and institutional - with specific resources and constraints. Some of these conditions under which the community is developed are explicitly stated, while some are implicitly stated. A simple way to think of CoP’s is to think of them as shared histories of learning (Wenger, 1998). Since the fundamental idea behind CoP’s is leveraging and sharing knowledge among its members, it only makes sense to understand how “knowledge” is viewed in organizations.

2.3 Knowledge in Organizations

Several different definitions have been provided to understand the concept of knowledge. Below are a few of the many definitions that have been published:

- Knowledge can be equated with professional intellect in organizations, which centers around know-what, know-how, know-why, and self-motivating creativity (Quinn, et al, 1996)
- Knowledge is agreed upon explicit or formal facts, rules, policies, and procedures (Levitt & March, 1988)
- Knowledge is that which is learned by studying or investigating (Davenport, et al, 1996).
Knowledge has been thought of in terms of “ba”, originally proposed by the Japanese philosopher Kitaro Nishida and further developed by Shimuza. Ba can be thought of as a shared space for emerging relationships. “Knowledge is embedded in ba, where it is then acquired through one’s own experience, or reflection on the experience of others” (Nonaka & Konno, 1998). In an organizational setting the ba can be thought of at many levels. For an individual, the ba is the team; for the organization, the ba is the various teams within the organization; and for the organization, the ba is the marketplace. All these ba’s together form a ‘basho’ (Nonaka & Konno, 1998). Although terms such as ‘ba’ and ‘basho’ are not common terms today, if you think about it, CoP’s within an organization serve as individual ba’s that can all contribute towards an organizational ‘basho’.

Knowledge has been distinguished into two categories; Tacit and Explicit. Explicit knowledge is present in the form of words, numbers, graphs, etc. This type of knowledge can easily be expressed among individuals. On the other hand, tacit knowledge is not easily expressible. Tacit knowledge is of a personal nature. Tacit knowledge comprises mainly of an individual’s beliefs, insights, intuitions, and hunches (Nonaka & Konno, 1998). The challenge lies in trying to express tacit knowledge as explicit knowledge so that it can be shared with others. Since tacit knowledge is very personal, a suitable environment must be created to allow tacit knowledge to be expressed as explicit knowledge.

The creation of knowledge is thought of as an interaction between explicit and tacit knowledge. Based on the interaction between tacit and explicit knowledge, four types of conversion patterns have been identified; socialization, externalization, combination, and internalization.

- **Socialization**: this pattern involves the sharing of tacit knowledge among individuals.
  
  During socialization, individuals engage in acquiring and disseminating tacit knowledge.
- Externalization: this pattern involves the translation of tacit knowledge into explicit knowledge to be shared with the group. During socialization, individuals participate in the conversion of tacit knowledge into explicit knowledge. The tacit knowledge is translated by customers or experts into readily understandable forms.

- Combination: this pattern involves refining the explicit knowledge translated by the group in order to be used throughout the organization. During the combination pattern, new explicit knowledge is captured and integrated and existing knowledge is edited in order to make the knowledge more usable. This refined knowledge can be presented in meetings or virtual presentations.

- Internalization: this pattern involves the conversion of explicit knowledge into the organization's tacit knowledge. During internalization, the explicit knowledge present in the organization is embodied through the use of simulations and experiments. Training programs are organized in order to encourage the “learning by doing” attitude (Nonaka & Konno, 1998).

The following figure helps to easily illustrate the four patterns of tacit/explicit knowledge interaction (Nonaka & Konno, 1998).
Using knowledge to add value to the organization has lead to an entire area of study called “Knowledge Management”.

2.4 Knowledge Management

“Knowledge Management (KM) is a systematic and organized approach to improve the organization’s ability to mobilize knowledge to enhance performance” (KPMG, 2003). KM focuses on effectiveness rather than efficiency. There are several assumptions that knowledge management makes that are worth noting:

- KM assumes that managers can better foster the knowledge by responding to the inventive and impromptu ways that people get things done
- KM assumes that activities that create values are not easy to identify
- KM assumes that all organizations compete with each other in an unpredictable market environment (Brown & Duguid, 2000).

The best practices of an organization are a valuable source of knowledge to safeguard. But, the real challenge lies in actually identifying all the best practices. One of the main reasons why this proves to be a challenge is the fact that there exists a gap between what people actually do and what they think they do. A large part of the individual knowledge is tacit, meaning that it has to be translated into explicit knowledge in order to be shared with others. At Xerox, it was noticed that reps shared best practices over a coffee table or while having breakfast. These best practices took the form of ‘storytelling’, where an entire incident was narrated to other reps about how a problem was fixed. It was noticed that the reps used ‘improvisation’ techniques as well. If a few reps were not able to arrive upon a satisfactory solution to fix a problem, then a specialist was called in to discuss the issue (Brown & Duguid, 2000). All this knowledge sharing is a valuable asset for the company. The question remains though, how can this valuable asset be stored?
One may wonder why organizations need CoP’s. Why not just have a large database containing all possible project documentation or any issue that is discussed in a meeting and provide access to all the employees of the organization? One of the biggest challenges that such an undertaking would face is the value of the information stored. Some of the information in the database may not be relevant, yet it will still be entered taking up space which literally translates into dollar amounts. Managing knowledge is a challenge. "What makes managing knowledge a challenge is that it is not an object that can be stored, owned, and moved around like a piece of equipment or a document. It resides in the skills, understanding, and relationships of its members as well as in the tools, documents, and processes that embody aspects of this knowledge. Companies must manage their knowledge in ways that do not merely reduce it to an object (Wenger, 1998).

Databases are probably the most basic of knowledge management tools; they are also probably the most ignored. Most databases are populated by managers who fill the databases with information that they think will be useful to the people that they manage (Brown & Duguid, 2000). However, more often than not, information coming from the top is usually not what is used. At Eureka, the reps themselves control the knowledge management database. A representative can submit a tip, this tip is evaluated by a peer group; it is either refined or more information is added to it and the tip is then entered into the knowledge database. This process has ensured that all the information in the database is current, non-redundant, and credible. Through this process, the Eureka database is estimated to have saved the corporation $100 million (Brown & Duguid, 2000).

2.5 Communities of Practice in Organizations
What are communities of practice (CoP’s)? According to Burk, they are simply an expansion to the one-on-one knowledge sharing (Burk, 2000). Wenger and Snyder take a different approach to describing CoP’s. According to them, CoP’s are informal groups who regularly share their
expertise and experiences. These groups are not formulated or controlled by management, they set their own leadership, and they follow their own agenda (Braun, 2002). In some regards, CoP’s may be the western adoption of the Japanese “ba” concept.

With the increase in the demand for educated, experienced individuals, organizations have a wealth of information in the form of all their employees. Especially in the IT field, an increase in the user demand for efficient applications has lead to an increase in the levels of interaction between programmers, testers, designers, analysts, etc. The output of each interaction is knowledge that has some value to the individuals participating in the interaction. Does it not make sense to have all this knowledge documented, so that it can serve as a reference to future members? Knowledge should be long-lived; it should survive well beyond the duration of the community.

Project teams are short lived; they last only for the duration of the project and then fade away. Ongoing operational teams are focused on their own projects, so their knowledge is restricted to their use. Knowledge oriented structures such as, learning centers, corporate universities, etc., are usually based at the headquarters, separated from the employees who might put the knowledge to use. CoP’s, on the other hand offer an underlying layer of stability, because members are in-charge of coordinating all their generated knowledge. “By assigning responsibility to the practitioners themselves to generate and share the knowledge they need, these communities provide a social forum that supports the living nature of knowledge” (Wenger, 1998). The following table provides an understanding of how CoP’s are formed, and what holds them together compared to the different group structures that exist in organizations today (Wenger, 1998).
<table>
<thead>
<tr>
<th></th>
<th>What is the purpose?</th>
<th>Who belongs?</th>
<th>How clear are the boundaries?</th>
<th>What hold them together?</th>
<th>How long do they last?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communities of practice</strong></td>
<td>To create, expand, and exchange knowledge and to develop individual capabilities</td>
<td>Self-selection based on expertise or passion for a topic</td>
<td>Fuzzy</td>
<td>Passion, commitment and identification with the group and its expertise</td>
<td>Evolve and end organically</td>
</tr>
<tr>
<td><strong>Formal departments</strong></td>
<td>To deliver a product or service</td>
<td>Everyone who reports to the group’s manager</td>
<td>Clear</td>
<td>Job requirements and common goals</td>
<td>Intended to be permanent</td>
</tr>
<tr>
<td><strong>Operational teams</strong></td>
<td>To take care of an ongoing operation or process</td>
<td>Membership assigned by management</td>
<td>Clear</td>
<td>Shared responsibility for the operation</td>
<td>Intended to be ongoing</td>
</tr>
<tr>
<td><strong>Project teams</strong></td>
<td>To accomplish a specified task</td>
<td>People who have a direct role in accomplishing the task</td>
<td>Clear</td>
<td>The projects goals and milestones</td>
<td>Predetermine d ending</td>
</tr>
<tr>
<td><strong>Communities of interest</strong></td>
<td>To be informed</td>
<td>Whoever is interested</td>
<td>Fuzzy</td>
<td>Access to information and sense of like-mindedness</td>
<td>Evolve and end organically</td>
</tr>
<tr>
<td><strong>Informal networks</strong></td>
<td>To receive and pass on information, to develop networks</td>
<td>Friends and business associates</td>
<td>Undefined</td>
<td>Mutual need and relationships</td>
<td>Never really start or end</td>
</tr>
</tbody>
</table>

Table 1: CoP vs other organizational teams/groups

CoP’s are not intended to replace teams or business units, however, it must be noted that they are unique in their ability to deal with a broad variety of knowledge-related issues. There are several known advantages to CoP’s. These are:

- CoP’s connect local expertise and isolated professionals
- CoP’s diagnose and address recurring business problems that might be causing team boundaries
• CoP’s aim to identify the knowledge related sources of uneven performance across business units and establish a common standard
• CoP’s can link and coordinate unconnected activities that address a similar knowledge domain (Wenger, 1998).

The importance of CoP’s to organizational performance is being recognized. Several multinational corporations have established formal CoP’s. Below are a few examples:
• Ford uses CoP’s to replicate business best practices
• Daimler Chrysler uses CoP’s to foster innovation
• Schlumberger uses CoP’s to help its members solve everyday problems
• Cap Gemini Ernst & Young uses CoP’s to steward knowledge (Por, 2003).

Cultivating CoP’s within the strategic areas of the organization serves as a practical means of managing knowledge for the organization (Wenger, 1998). Knowledge is a valuable asset to an organization and it should be safe guarded and made the best use of. CoP’s have several benefits. One such benefit is that they connect not only people from among the same group, but they allow interaction among different groups across the organizations. This process ensures the development of a well knit community built around the core business processes of the organization.

CoP’s emerge in most organizations naturally. Some fade away and some flourish, whether or not the organization recognizes them. CoP’s survive primarily on the voluntary engagement of their members and on the emergence of internal leadership. In order to mould knowledge gathering as a living process, there is a certain degree of autonomy and informality that must be incorporated into the community (Wenger, 1998). Organizations can also play a major role in sustaining CoP’s. Organizations can value the learning that the community does, make the necessary resources available, encourage participation and give communities a voice in
organizational decision making (Wenger, 1998). One of the primary tasks of a CoP is to establish a common baseline and standardize what is well known by people in a particular area. Communities assist their members to focus their attention on the more challenging and critical issues related to their area of interest (Wenger, 1998).

Once a CoP is formed in an organization, there are several factors that have to be taken into consideration to ensure its smooth running. Some of the factors include:

- Value of the content: knowledge within the community must be accurate and must be of value to the individual
- Nature of the content: initially the community will need to attract members; being too critical about the content of the community may ward potential members away.
- Management awareness: in order for a community to survive within the organization, it is essential to get ‘management buy-in’ to ensure delegation of the required resources towards the community.
- Inadequate data: in order for the community to attract members, it is essential that there be adequate content present in order to spark interest among individuals.
- Strict leadership: participation in a community must be voluntary; members should enjoy the experience of participating in a knowledge sharing community. There may be resentment towards contributing to the community if participation is forced.
- Facilitation: a good community must have a facilitator or moderator to oversee the activity of the community to ensure that the content and direction of the community do not stray (Wenger, 1998).

The subsections that follow provide insight into communities in terms of how a community is formed, how a community is designed, the various forms that a community can take, participation trends in a community, and the downfalls of a community.
2.5.1 Belonging to a Community

Blanchard and Markus have identified a sense of community framework that incorporates the four dimensions of belonging to a community.

- **Feelings of membership**: a feeling of membership arises as a result of members' sense of belonging to the group. Members develop a sense of membership to the group by making a personal investment of time to the group.
- **Feelings of influence**: feelings of influence develop as a result of having influence on and being influenced by the group.
- **Integration and fulfillment of needs**: this dimension is developed through a sense of being supported by members of the community as well as supporting them.
- **Shared emotional connection**: this dimension is developed as a result of relationships that are developed among members of the community (Blanchard & Markus, 2004).

The increasing existence of virtual communities has lead to the concept of 'sense of virtual community' (SOVC). SOVC occurs when a sense of belonging exists among the members in a virtual community (Blanchard & Markus, 2004). In a study conducted on an MSN community, members of the community identified several reasons for their recognizing MSN as a community.
Recognition: members viewed MSN as a community, because they could recognize other members in the community.

Identification: members viewed MSN as a community, because they were able to create an identity for themselves, and could recognize other members’ postings as responses.

Support: members viewed MSN as a community, because of the support that was present in the group, both socio-emotional and informational.

Relationship: members believed that MSN was a community, because they had developed strong personal relationships with other members. These relationships often developed through private online communication and sometimes lead to face-to-face interactions.

Emotional attachment: members believed that MSN was a community, because of the fact that their involvement in the community was important to them.

Obligation: members believed that MSN was a community, because they felt that they owed the community and needed to contribute or give back to it (Blanchard & Markus, 2004).

2.5.2 Participation in Communities of Practice

A CoP is not like a team that management can dictate; the success of a community depends solely on the passion and commitment that its members exhibit. Membership to a community
can be self-selected or assigned, but the actual level of engagement is at a personal level. In essence, the participation in a community of practice is voluntary (Wenger, 1998).

Participating in a CoP has long-term and short-term benefits for its members. In the short-term, members can get help with immediate problems; they spend less time hunting for solutions. By including the experience of peers, more efficient and innovative solutions can be devised. In the long-term, members develop professionally; they keep abreast of the latest developments in their field. CoP’s provide tangible and intangible value to their members. DaimlerChrysler has Tech clubs that help each other solve immediate problems, while accumulating their experience in a knowledge base. The tech clubs discuss new technology trends with suppliers and prepare the organization to respond to the changing trends. Tangible value would include standard manuals, improved skills, and the reduced time and cost by having faster access to information. Intangible values are created through the relationships that the members develop among themselves, the sense of belonging that is created among the members, and the professional confidence generated among the members (Wenger, 1998).

CoP’s reproduce their membership by sharing their competence with new generations through a version of the same process by which they develop. Special measures may be taken to open up the practice to newcomers, but the process of learning is not essentially different. The ability to have multiple levels of involvement is an important characteristic of CoP’s. To become a full member of a CoP requires access to a wide range of ongoing activities, old-timers, and other members of the community, and to information, resources, and opportunities for participation (Wenger, 1998).

CoP’s create value for its members by connecting the personal development and professional expectations of its members with the strategy of the organization. The community will not thrive unless its members are dedicated. If the value that the community is creating for the
organization is not understood, it becomes difficult to justify the resources needed by the community. "The ability to combine the needs of the organization and community members is crucial in the knowledge economy, where companies succeed by fully engaging the creativity of their employees" (Wenger, 1998). CoP’s are giving rise to a new type of organization- not one that is based around providing products and services and has to constantly shift its strategy to meet changing market demand, but one that is based around knowledge that remains more stable (Wenger, 1998).

A study conducted on an MSN community identified three types of members: leaders, participants, and lurkers. Leaders were the members that proved to be influential to the group; they actively participated in posting messages and responses to the group. Participants were those members who posted messages to the group, but did not identify themselves. Lurkers were those members who did not post any messages to the group, but observed all group activity (Blanchard & Markus, 2004). The same study identified four types of participation styles: active participation, passive participation, public participation, and private participation. During active participation, members engage in posting and responding to messages in the group. During passive participation, members engage in only reading the messages. During public participation, messages are broadcast to the entire group. However, during private participation, communication may be on a one-on-one basis through personal email (Blanchard & Markus, 2004).

In order for an organization to learn from its own experience and to make full use of its knowledge, CoP’s(where the knowledge is gathered) and the business units where the knowledge may be applied should be tightly interwoven. According to Ardichvili et al., when employees view knowledge as a public commodity belonging to the entire organization, knowledge flows more easily. The success of knowledge sharing in organizations is attributed largely to the
organizational culture and climate (DeLong & Fahey, 2000). This results in members taking on the roles of both an operational knowledge member and a community member. Such an organization is termed a "double-knit" organization. The learning cycle continues through the process of multi-membership (Wenger, 1998).

Figure 5: Double-knit organization knowledge model

2.5.3 The various forms of Communities of Practice

CoP's take many shapes and forms in organizations. The following is a list of the various categories that a CoP can fall under:

- Small or big: some communities comprise of only a few members, whereas others may consist of hundreds and sometimes thousands of members. Large communities are usually subdivided based on geographical location or by subtopic to ensure that all the members have the opportunity to actively participate.

- Long-lived or short-lived: some CoP's exist for several years, while others fade away soon.
- Colocated or distributed: some CoP’s are located within the organization whereas some communities are distributed over wide areas. Some communities meet on a regular basis over Wednesday breakfast for example, whereas most communities interact mainly through email.

- Homogeneous or heterogeneous: communities can comprise of individuals in a similar field or functional area. Sometimes communities comprise of individuals from various different disciplines and functional areas if they all share a common interest. For example in an IT organization, if a pension application is being developed for a firefighter fund, the community could comprise of programmers, testers, designers, sales/marketing representatives.

- Inside and across boundaries: CoP’s can be formed within a business unit to share common problems, across business units to interact with peers in different functional areas, or among affiliates to keep up with the constant changes in technology and procedures.

- Spontaneous or intentional: most communities are formed on an informal basis; individuals coming together to build upon a common interest. Some times however, organizations take the necessary steps to have a community in place.

- Unrecognized to institutionalized: some CoP’s are not recognized even to their members. For example, consider a group of programmers discussing all the bugs they encountered throughout the morning at lunch break; unknown to even them, they are accumulating knowledge that is of value to each of them. Some communities, such as those formed at DaimlerChrysler are officially recognized by the organization and are considered an integral part of organizational decision making (Wenger, 1998).

### 2.5.4 Designing a Community of Practice

7 principles have been identified that can assist in developing CoP’s. These principles are:
- Design for evolution: the community should be designed in such a way that it will encourage participation from new members, thus pulling the focus of the community in new directions.

- Open a dialogue between inside and outside perspectives: communities are built by the collective efforts of all its members. In most cases only a member can appreciate the topics discussed. However, sometimes it is important to bring in outside perspectives into the group for the members to better appreciate the knowledge gained.

- Invite different levels of participation: communities usually comprise of three sets of individuals. There is the core group that is rather small, usually 10-15 percent of the whole community that is very active in all community activities. There is the active group that is also rather small, usually 15-20 percent of the whole community. This group participates in the activities of the community, but is not as active as the core group. Finally, the peripheral group; the largest portion of the community, remains quiet on the sidelines. The individuals in this group usually do not participate, because they feel that their contributions are not appropriate, or they just do not have the time. “The key to good community participation and a healthy degree of movement between levels is to design community activities that allow participants at all levels to feel like full members”.

- Develop both public and private community space: communities should be designed in such a way that they encourage interaction among members both in public and private settings.

- Focus on value: in order to make it easy to identify their expected value, communities should create events and activities to help the potential value emerge.

- Combine familiarity and excitement: communities should be places where one can get away from work and talk about the things that he/she is passionate about. The community should bring about a sense of belonging among its members.
Create a rhythm for the community: a community should have an established set of procedures, such as regular email notices, weekly discussions, etc. The rhythm of the community is the strongest indicator of its liveliness (Wenger, 1998).

Several studies have identified that the most important factor in a community's success is its leadership. A coordinator/facilitator is an integral part of a CoP. Community coordinators/facilitators are responsible for a number of functional activities:

- Identifying important issues in the community
- Planning and facilitating community events
- Informally linking community members
- Fostering the development of community members
- Managing the boundary between community members and other formal organizational units, such as teams, discussion panels, etc
- Helping to build the community by incorporating best practice, lessons learned, tools and methods
- Evaluating the community's contribution to its members and the organization (Wenger, 1998).

Although CoP's evolve naturally, there are five stages of development that the community undergoes. These are:

- Potential
- Coalescing
- Maturing
- Stewardship
- Transformation
While the Potential, and Coalescing phases on community development focus on establishing a community, the Maturing, Stewardship, and Transformation phases of community development focus on how to help communities grow, integrating communities into the organization, and changing the focus of communities based on changing organization and member needs.

**Potential**

In this stage the idea to build a community is introduced. A shared interest is developed among individuals. During this stage some people step up and take responsibility for the community.

There are several steps to be followed to ensure the successful launch of the potential phase of community building. These steps are:

- Determine the primary intent of the community. The American Productivity and Quality Center (APQC) has identified several underlying intentions that might be responsible for the formation of the community. These intentions are:
  - To help each other solve everyday problems in their disciplines
  - To develop and disseminate a set of best practices
  - To develop the tools, insights, and approaches needed by members in field assignments
  - To develop highly innovative solutions and ideas

- Define the domain
  - Focus on the dimensions of the domain that are particularly important to the business
  - Focus on aspects of the domain that community members will be particularly interested in
  - Define the scope wide enough to bring in new members, but narrow enough that most members will be interested in the topics discussed

- Build a case for action
— Build a case for senior management describing the potential value of the community and the rationale for supporting it
  - Identify potential coordinators and community leaders
  - Interview potential members
  - Connect community members
  - Create a preliminary design for the community

**Coalescing**

During this stage, the community is officially launched. During this stage, members build relationships, trust, and awareness for each other’s interests and needs. There are several steps to be followed to ensure the successful launch of the coalescing phase of community building.

These steps are:
  - Build a case for membership
  - Launch the community
  - Initiate community events
  - Legitimize community coordinators
  - Build connections between core group members
  - Find the ideas, insights, and practices that are worth sharing
  - Document judiciously
  - Identify opportunities to provide value
  - Engage managers

**Maturing**

This phase involves clarifying the community’s focus, role, and boundaries. Members in the community understand each other’s styles and technical issues. During this phase, communities may break apart into sub-units, or reorganize in terms of their focus and domain. There are several steps that can be followed during the maturing stage of the community. These steps are:
• Identify gaps in knowledge and develop a learning agenda
  o The emphasis in this phase changes from defining to developing
  o In order to develop a learning agenda, community coordinators need to map out what the community already knows, what they community needs to know, and the projects and resources they will need in order to fill this gap.

• Define the communities role in the organization
• Redefine community boundaries
• Establish a routine for entry requirements and processes
• Measure the value of the community
• Maintain a cutting edge focus
• Build and organize a knowledge repository

**Stewardship**

This phase focuses on sustaining momentum through the natural shifts in the community’s practice, its members, technology, and the community’s relationship to the organization. “To remain vibrant, communities need to shift topics along with the market, invite new members, forge new alliances, and constantly redefine their boundaries” (Wenger, 1998). There are several steps that can be followed during the stewardship phase of community building. These steps are:

• Institutionalizing the voice of the community
• Rejuvenate the community
• Hold a renewal workshop
• Actively recruit new people to the core group
• Develop new leadership
• Mentor new members
• Seek relationships and benchmarks outside the organization
- Inputs from outside sources is one of the most effective ways to refresh a community’s focus

**Transformation**

When a community widens its boundaries, there is a high possibility that the community will lose its original focus. The transformation of a community is considered to be as natural as its birth, growth, and life. Changing markets, organizational structures, and technology can all be factors that contribute to a change in the community’s domain (Wenger, 1998).

### 2.5.5 Downfalls of a Community

CoP’s are not the ‘silver bullet’. They will not solve all the organization’s knowledge needs. There are several factors that can lead to the eventual downfall of a community. One of the prominent reasons for community failure is the pride of ownership that develops among the members. Arrogance, pride, and a feeling of exclusive ownership of the community’s knowledge can hoard that knowledge from other communities or from the organization as a whole. Over time, communities develop clique relationships. This means that the members of the community develop a strong friendship for each other, preventing members from “cliquing each other” and seeking to deepen their knowledge. These communities become stagnated as members strive to protect each other from challenges. In order to avoid the ‘clique phase’ of a community, new members should be introduced to the community to reopen the community’s focus. Another important reason that has been identified as being a cause for the failure of communities is the ‘lack of proper documentation’. If communities do not document their insights, they may end up discussing issues that have previously been decided. This will eventually cause members to feel bored and unproductive (Wenger, 1998).
3. THE RESEARCH DESIGN

This chapter will provide insight into the research instruments that were used to collect data for the research and why these particular instruments were chosen. This chapter will also highlight the research method and the research model used for this study. The research model was designed based on the various factors that were identified from the interviews.

3.1 Research Instruments

The research instruments used in this study are interviews and a facilitation session. In addition, responses from surveys were monitored to understand the level of knowledge sharing among the Org X I/T associates. It is important to make note that the data from the surveys and the forums, indicate the present level of participation in the knowledge sharing at Org X.

3.1.1 Personal Interviews

Personal semi-structured interviews were used as the primary source of gathering data for this research work (See Appendix A for a list of interview questions). It appeared that people were willing to share more on a one-on-one basis. According to Patton, the purpose of interviews is to identify what someone has on their mind and bring this out into the open. Patton further mentions that interviews are conducted in order to uncover things that are not directly observed (Patton, 1990). There are several known advantages associated with conducting interviews:

- Interviews allow the researcher to adjust the pace and style of asking the questions
- Interviews serve as a convenient way of gathering information and opinions of individuals in the work place
- Interviews serve as a good method to elicit responses on complex or sensitive issues (Hannabus, 1996).
According to Yin, there are three types of interviews that can be conducted—open ended, focused, and surveys. Open ended interviews allow the researcher to ask the respondent not only for the facts of the matter, but for their opinions as well. Focused interviews consist of a specific set of questions that the respondent is expected to answer. Surveys are geared towards getting more in depth responses from the respondent. Surveys comprise of more structured questions (Yin, 1994).

Yin points out that there are two notable strengths to conducting interviews. The first strength is that interviews are targeted; they are focused directly on the research in question. The second strength is that they are insightful and as a result may allow the researcher to make causal inferences. On the flip side, Yin states that there are several drawbacks to interviews. One drawback is that interviews are subject to common problems such as, bias and poor or incorrect translation of responses. Another drawback is the occurrence of reflexivity. Reflexivity occurs when the respondent answers based on what the researcher wants to hear. In other words, the respondent tells the researcher what he/she wants to hear (Yin, 1994). 10 informal face-to-face interviews were conducted among Org X I/T associates in the belief that these drawbacks would be eliminated. The average length of each interview was 15 minutes. The interview responses were transcribed and later used for analysis purposes. Analysis of the interview responses paid close attention to the reasons that were stated as being barriers to the knowledge sharing at Org X and the occurrence of each barrier.

### 3.1.2 Facilitation Session

One facilitation session (See Appendix B for session details) was conducted at Org X in order to understand why there was not much activity observed on the I/T forums set up at Org X. The intent of the session was to identify potential reasons why there was not much activity on the forums and come up with possible solutions for these reasons. It was decided that depending
on the feasibility of the proposed solutions, and management's discretion, some/all of the proposed solutions could be put into practice eventually to increase the level of participation on the I/T forums. Group Support System (GSS) software was used to conduct the session. GSS is designed to make group meetings and decision making more productive. There were several interesting observations made from the session which will be highlighted in later chapters. The use of GSS results in large amounts of data being collected in a short period of time, mainly because of the following features of GSS:

- Parallelism: GSS allows for multiple participants to contribute to the session at the same time; no longer do individuals have to wait their turn to contribute an idea or session to the group.
- Anonymity: Participants using the GSS can contribute to the session without the fear of having comments traced back to them. One of the biggest advantages of GSS is that people feel more comfortable contributing ideas or suggestions when the ideas cannot be traced back to them.
- Electronic memory and display: A GSS is very advantageous in that the entire session is automatically stored in memory and can be retrieved at any time.
- Voting capability: A GSS allows participants to vote on issues and immediately allows participants to view the results of the voting process. Thus, the use of GSS can result in a quick, efficient, and effective meeting outcome (groupsystems.com).

### 3.1.3 Surveys

Surveys (See Appendix C for survey details) were distributed electronically in order to understand how people felt about all the knowledge sharing activities at Org X. Statistics from the surveys helped to provide an idea of how employees at Org X perceived the effectiveness of ways in which knowledge was distributed among the I/T Org X associates. The intent behind distributing
electronic surveys was to reach a larger population of I/T Org X associates. Each survey followed a technical presentation, that was recorded by an I/T associate to spread knowledge about new technology that was being used at Org X or about the status of projects (successfully initiated or completed). Each survey comprised of an average of 3 questions (limitation based on previous Org X experience). The surveys were intended to serve as a means to collect feedback from the I/T associates regarding the content of the presentation and if the presentation provided the associate with useful information for his/her job.

3.1.4 I/T Forums

Five I/T forums (See Appendix D for I/T forum details) have been set up at Org X. Each of these forums was set up with the intention of providing a common communication platform for I/T associates involved in the various development areas. The 5 forums are:

- I/T Application Integration Developers Forum (started: 5/10/2004)
- I/T Java Developers Forum (started: 3/22/2004)

Participation levels on each forum were monitored to understand the extent of knowledge sharing that was occurring among the I/T associates at Org X.

3.2 The Research Process

The figure below provides a graphical representation of the research process followed for this study.
3.3 The Research Model

As stated earlier, the intent of this research work is to identify barriers that exist in the knowledge sharing process at Org X and to see if these barriers can be leveraged to form a community of practice. So, the research questions are,

1. *What are the barriers that prevent employees from participating in the knowledge sharing process?*

2. *What measures can be taken to overcome these barriers?*

3. *Can a community of practice be established if these barriers are overcome?*

This research takes a qualitative case study design approach and uses grounded theory to identify variables for the research model. The data collected from the various methods discussed was analyzed and relevant variables were identified.

Grounded theory is a qualitative research methodology which involves the collection of data through field observations, interviews, meetings, documents, etc. The data is analyzed to identify variables, categories, and relationships between categories. According to Strauss & Corbin,
“grounded theory involves a process where data, collection, analysis, and theory stand in close relation to each other; one begins with an area of study and what is relevant to that area is allowed to emerge” (Strauss & Corbin, 1998).

The main area of interest for this research is knowledge sharing, since the basis of CoP’s is based solely around the knowledge sharing process in an organization/team/group. Given that the primary goal of this research is to identify barriers that exist in the knowledge sharing process at Org X, and to see if these barriers can be leveraged to form a CoP, the first step is to identify the knowledge sharing barriers that exist in the I/T department at Org X.

The data collection sources (interviews, facilitation session) were used as the primary basis to identify knowledge sharing hindrances. Excerpts from the interviews and session responses were used as guides to solicit potential knowledge sharing obstacles in Org X. Some of these excerpts include: *(the identified knowledge sharing barriers are indicated in bold)*

- “afraid to ask a stupid question” - **personal inhibitions**
- “no benefit seen” - **lack of perceived knowledge value**
- “other than the moderators, it is no ones responsibility to be active in the forums, therefore they will not participate” - **lack of perceived knowledge value**
- “lack of interest” - **lack of interest**
- “not perceived as a knowledge base” - **lack of perceived knowledge value**
- “Analysts do not have enough time for this; too busy with projects” - **lack of time**
- “people are afraid of appearing foolish in front of their peers” - **personal inhibitions**
- “time is a big issue, but people also take the ‘what is in it for me approach’ most of the time” - **lack of time**

Based on the interviews and the facilitation session conducted the following inferences were drawn regarding the knowledge sharing barriers present in the I/T department at Org X:
- Org X I/T associates do not participate in knowledge sharing activities, because there is a lack of interest among I/T associates to participate in knowledge sharing.
- Org X I/T associates do not participate in knowledge sharing activities, because of personal inhibitions (shyness, language barrier) that prevent them from participating in knowledge sharing activities.
- Org X I/T associates do not participate in knowledge sharing activities, because their busy work schedules prevent them from participating in knowledge sharing activities.
- Org X I/T associates do not participate in knowledge sharing activities, because they are unable to see the value of the knowledge being distributed and/or shared through knowledge sharing activities.
- Org X I/T associates do not participate in knowledge sharing activities, because the company culture is not very conducive to knowledge sharing activities.

The figure below provides a graphical representation of the knowledge sharing hindrances that have been identified. These hindrances have been rephrased to form suitable factor names.
Figure 7: Research model

Factor definitions

- Lack of interest: this factor refers to a general feeling of disinterest among I/T associates to participate in the knowledge sharing process.
- Personal inhibitions: this factor refers to the nature (introvert, shy, ...) of some I/T associates that prevents them from participating in knowledge sharing activities.
- Lack of time: this factor refers to the busy work schedules of I/T associates that does not leave them with much time to participate in knowledge sharing activities.
- Lack of perceived knowledge value: this factor refers to the inability of I/T associates to see the value of the knowledge that is being distributed. This variable, basically refers to the fact that an I/T associate does not see the value that the knowledge sharing activity provides to him/her.

- Non-conducive company culture: this factor refers to the corporate culture that the respondents view as not being very conducive to knowledge sharing.

Based on acquired responses, inferences can be made about the effect that each of the variable has on the knowledge sharing process. As can be inferred from the model; as the level of perception of each of the factors increases, the level of knowledge sharing decreases.

Figure 8: Research model inferences
Subsequent chapters will provide possible solutions to the knowledge sharing barriers that have been identified. At the time of the writing of this report, all the suggested solutions have not been put into place at Org X, hence verifying the accuracy of these inferences is beyond the scope of this report. These inferences serve as an extension point for further research.
4. KNOWLEDGE SHARING at ORG X

This chapter will provide an overview of all the knowledge sharing processes that are in place in the I/T department at Org X. The knowledge sharing processes in place at the time of the writing of this report are,

- Development forums
- Technology exchanges
- Monthly newsletter
- I/T website

4.1 Development forums

Five development forums have been out into place in the I/T department at Org X. These forums include:

- I/T Application Integration Developers Forums (started 5/10/2004)
- I/T Mainframe Developers Forum (6/30/2004)

Each forum has a moderator assigned to it. The moderator is responsible for encouraging participation to the forums by prompting discussion on key issues. Moderators are also responsible for ensuring that no question remains unanswered for too long. Moderators are notified via email if a new entry is made to the forum.

4.2 Technology exchanges

Every month, the I/T department organizes a one hour technology exchange, where employees present projects that they are working on, projects that have been completed, new technology
that is being introduced in the company, etc. Each Tech exchange comprises of an average of two presentations and is attended by about 60-90 I/T employees on an average. Employees are approached in advance about presenting at these exchanges. The intent of the tech exchange is to provide the various I/T teams, knowledge about the work that is being done in other teams. Presenters at each tech exchange are asked to do an audio recording of their presentations. These audio presentations are published to the I/T website and the I/T monthly newsletter with the intent that employees who were unable to attend the tech exchange do not miss out on the information that was being presented. Information about the tech exchanges is published to the I/T website.

**What is the Technology Exchange?**
A primary objective of the Tech Exchange is to provide you the opportunity to maintain an up to date awareness of what standard technology options are available today and are planned for future utilization. Our goal is to present topics of interest that pertain to Applications Development and Integration as well as Infrastructure.

**Who should attend?**
Anyone in I/S involved with Application Development and Integration or Infrastructure planning, development and support.

**When is the Next Exchange?**
Wednesday, January 26, 2005
2:00 p.m. in the Auditorium

Figure 9: Tech Exchange page on I/T website

### 4.3 Monthly newsletter

An I/T newsletter is sent out monthly. The newsletter highlights any major happenings within the I/T department during the previous month and in addition includes links to that months tech exchange audio presentations
4.4 I/T website

The I/T department website, published each week, highlights any major happenings within the I/T department and includes links to tech exchange audio presentations.

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4.5 Resources

- Application Integration
- Architectures & Strategies
- Business & Technology Directions
- Business & Data Modeling & IAA
- Data & Data Base
- Forms & Templates
- Languages
- Learning Opportunities
- Library Management
- Processes / State & Guidelines
- Security
- Services & Consulting
- Technologies & How To's
- Tools
- Unscheduled Outages
- Vendor Documentation

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This Month's Forum News...

Creating a Forum Interest Profile could not be easier! By simply clicking on the appropriate "Subscribe" forum button, your interest profile is created. "MAGIC" Please look for the "Subscribe" forum buttons in this month's I/T Developer Network Newsletter

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Tech Exchange November Presentations

Please take a few minutes to complete a short survey behind each presentation. Each survey should take about a minute of your time to complete. Your feedback will help us improve the quality of future presentations

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Figure 10: I/T homepage
5. THE RESEARCH ANALYSIS

This chapter will provide an analysis of the research questions,

1. What are the barriers that prevent employees from participating in the knowledge sharing process?
2. What measures can be taken to overcome these barriers?
3. Can a community of practice be established if these barriers are overcome?

This chapter will also highlight findings from the literature with regards to similar problems that other organizations faced and success factors that are required for the establishment and functioning of a CoP in an organization.

It has been observed that employees shy away from contributing information primarily because of the following two reasons: (a) Fear of criticism, where employees fear that they will be criticized by others about the content of the information being published, or they will be considered “stupid” for not knowing the answer to a question that they might post to a group discussion board. (b) Irrelevant contributions, where employees are not sure if their contributions are relevant to the specific discussion (Ardichvilli et al, 2003).

Based on a study conducted at Caterpillar, where 600 online communities have been established with over 15,000 members worldwide, the primary reasons why employees participate in the knowledge sharing process are,

- Moral obligation: employees felt that they had a responsibility to the group to contribute information
- Community interest: employees were interested in the goals of the community and the content of the information that was being shared
- Organizational culture: employees expressed that much of the knowledge sharing was possible due to the organization culture, that encouraged mutually supportive relationships between employees.
- Subject matter experts: some employees expressed that they contributed information, because they felt that they needed to establish themselves as experts in the particular area of discussion.
- Giving back: some employees contributed information, because they felt a moral responsibility to give back something to the group; in this case their knowledge.
- Timeliness of the information: employees felt that they were able to get immediate feedback for questions that they posted to the group.
- Increased work efficiency: employees felt that access to timely information resulted in the production of more timely and efficient work (Ardichvili et al, 2003).

5.1 Research Question #1

What are the barriers that prevent employees from participating in the knowledge sharing process?

Based on personal interviews that were conducted among I/T associates at Org X, 5 factors were identified as being barriers to the knowledge sharing process in the I/T department at Org X:

- Lack of interest
- Personal inhibitions
- Lack of time
- Lack of perceived knowledge value, and
- Non-conducive company culture
A study was conducted at Caterpillar to identify the barriers that prevented employees from contributing to their knowledge community. Some of the reasons (indicated in brackets) are in line with those identified at Org X.

- Information hoarding: some employees felt that information was a personal asset, and hence were not interested in the ‘whole knowledge sharing idea’ (Lack of interest)
- Fear of loosing face: some employees did not contribute to the knowledge community at Caterpillar, because they were unsure of the relevance of their information to the topic under discussion. They were afraid of being criticized or ridiculed for their contribution (Personal inhibitions)
- New comers: new employees felt that they had not yet earned the right to contribute to the group
- Time consuming: employees felt that getting their contribution approved by management was time consuming; it was faster to get information directly through phone calls, emails, etc. (Lack of time)
- Too much information: some of the employees stated that if they needed an answer, the community provided several solutions, some which might not be relevant and require additional time to verify. They felt that they could get answers quicker by directly contacting individuals over the phone or through email, or personal conversations (Ardichvili et al, 2003). (Lack of perceived knowledge value)

5.2 Research Question #2

What measures can be taken to overcome these barriers?

The reasons for the lack of participation in the knowledge sharing process at Org X are,

- Lack of interest
- Personal inhibitions
Lack of time
Lack of perceived knowledge value, and
Non-conducive company culture

Based on personal interviews, a facilitation session conducted at Org X, and literature, a number of solutions have been identified for each problem area.

Lack of interest
In order to promote interest to participate in the knowledge sharing process, the following measures could be put into place:

- Introduce controversial topics of discussion to the group- eg: Java development vs. .Net development, Oracle databases vs. DB2 databases
- Provide incentives to participate in knowledge sharing- post redeemable coupons on forums for the first respondents
- Provide a brief description of each forum, emphasizing the goal of the forum, its target audience and the forum moderator(s) contact information
- Each forum should contain FAQ’s (Frequently asked questions) to stimulate interest among employees

Personal inhibitions

“People who are reluctant to contribute when asked to write something up for a database, are willing to share information when asked informally by their colleagues” (Dixon, 2000). In order to minimize personal inhibitions and promote participation in the knowledge sharing process, the following measures can be put into place:

- Managers and team leads should promote the knowledge sharing process at team meetings and through team emails; management should emphasize and encourage participation in all knowledge sharing activities
A few individuals should be identified who can promote knowledge sharing and encourage the ‘shy employees’ to participate. Employees must be made to feel that every contribution adds value to the discussion.

**Lack of time**

In order to encourage participation in the knowledge sharing process and minimize the lack of time issue, the following measures can be put into place:

- Managers should set aside time (1-2 hours) each week to allow employees to make knowledge contributions.

**Lack of perceived knowledge value**

In order to allow employees to see the value of the knowledge being contributed, and encourage participation in the knowledge sharing process, the following measures can be put into place:

- Success stories from using the forums/discussion boards should be published. This would emphasize the value that contributing knowledge has to the organization.
- Industry information about similar problems, success stories should be published; this gives employees an idea of where they stand with relation to other companies in the industry.
- Org X has identified a few SME’s in some of its areas of business. These SME’s might be possible candidates for facilitators for the forums. These SME’s might be able to engage employees in seeing the value of sharing knowledge.

**Non-conducive company culture**

A supportive company culture is a key prerequisite for knowledge sharing (DeLong & Fahey, 2000). “The ability to ‘grow knowledge’ depends greatly on the sharing of that knowledge between employees, which requires their cooperation. This places a premium on satisfying the needs of employees –the owners of intellectual capital. These employees are likely to want challenging and interesting work with a high degree of autonomy” (Swart & Kinnie, 2003). “The
extent to which the organization’s reward systems and policies stimulate collaborative versus individualistic work is often taken as an indication of the collaborative cultures of the company” (Orlikowski, 1992). There are several measures that can be taken to promote a knowledge sharing organizational culture:

- Management should distribute emails/newsletters that promote knowledge sharing among employees
- Management should provide incentives/rewards to encourage knowledge sharing among employees
- Management should encourage knowledge sharing discussions by allocating time each week/once a month, etc.
- More aggressive moderators should be assigned to each of the forums. These moderators should be assigned the task of devising methods/strategies to increase the levels of participation on his/her forum. Research shows that a facilitator/moderator is an integral part of a CoP. He/she is responsible for:
  - Identifying important issues in the community
  - Planning and facilitating the community events
  - Informally linking community members
  - Fostering the development of community members
  - Helping to build the community by incorporating best practices, lessons learned, tools and methods
  - Managing the boundaries of the community
  - Evaluating the community’s contribution to its members and the organization as a whole (Wenger, 1998).
Although, in the case of Org X, the facilitators are being discussed in the context of the forums, they are still very integral to the functioning of each of the forums. A facilitator is the driving force behind the functioning of each forum.

5.3 Research Question #3

Can a community of practice be established if these barriers are overcome?

This research work was started with the intent of establishing a community of practice in the I/T department at Org X after identifying the barriers that hinder the knowledge sharing process. The knowledge sharing barriers prevalent among the I/T Org X employees have been identified. Possible solutions to overcome these barriers have been identified. The question now remains; can a CoP be established if these barriers are overcome?

Some of the solutions to overcome the knowledge sharing barriers (identified in brackets) have been put into place, others may be implemented at a later time.

- In order to generate interest among the employees to participate in discussions and to allow them to see the value of the knowledge being presented, seeded questions were introduced to the forums, eg: share an example of when you used open source code for your development work? It was anticipated that this would boost the levels of participation, however the participation level was very minimal in comparison with the expectations (Lack of interest)/(Lack of perceived knowledge value)

- A $45 Best Buy gift card is presented to an individual at the monthly Tech Exchange for the most valued entry to the forums (Non-conducive company culture)/(Lack of interest)

- An “award for sharing” certificate is presented to an individual at the monthly Tech Exchange for the most valued entry to the forums (Non-conducive company culture)/(Lack of interest)
• A monthly newsletter sent out by an I/T Vice President provides information about how to share information with other employees and provides links to the various forums. The newsletter contains “catchy phrases” regarding the forums, in an attempt to spark interest among the I/T employees and make them see the value of the forums (Non-conducive company culture)/(Lack of interest)/(Lack of perceived knowledge value)

• The I/T website which is updated weekly contains information about the knowledge sharing activities and provides links to the various forums. The I/T website contains “catchy phrases” regarding the forums, in an attempt to spark interest among the I/T employees and make them see the value of the forums (Non-conducive company culture)/(Lack of interest)/(Lack of perceived knowledge value)

• Just by a click of a button, each employee can receive immediate email notification if a new entry has been posted to the forum he/she wished to be notified about. This feature was implemented to allow employees easy accessibility to the forums and to stimulate interest regarding messages being posted to the forum (Lack of interest)

• Each entry to a particular forum has the name of the contributor appended to it. Although there was much debate about maintaining anonymity, it was decided to include the contributors name for credibility purposes. The rational was that, knowing the source of the contribution would provide employees with a sense of trust for the forum and if the contribution was made by a SME (subject matter expert), they would see great value in the information (Lack of interest)/(Lack of perceived knowledge value)

As can be seen, several measures have been put into place to overcome the identified knowledge sharing barriers. At the time of this report, discussions were under way to implement some more solutions such as,
- Soliciting more aggressive moderators for each of the five forums to encourage more participation
- Including knowledge sharing participation in each employee’s yearly goals report

Since these measures have not been put into place as of the time of the writing of this report, the influence that they will have on the knowledge sharing participation levels cannot be determined.

The fundamental principle behind CoP’s is that, “they are not built; they grow through member participation, contributions and ownership” (Sandars, 2004). So, despite all the measures that can be put into place to overcome knowledge sharing barriers, without the participation of employees, the effort to establish a CoP will be unsuccessful, since participation in a community is voluntary..! In the case of Org X, it was identified that employees were very helpful and were willing to share information if needed, but only on a personal basis. There seemed to be a ‘hidden bubble’ around each employee in terms of the information/knowledge that he/she possessed. Observation shows that this tendency can be attributed more too corporate culture, than anything else. If the corporate culture was restructured to incorporate knowledge sharing and community development, then significant changes in the level of knowledge sharing could be observed. Although, restructuring corporate culture is easier said than done, it is very important to note that corporate culture does play a huge role in developing an overall feeling of sharing among all the employees. So, the ‘gap’ in knowledge sharing in organizations could be attributed in large part to the conduciveness of the corporate culture to incorporate and encourage knowledge sharing.
6. DISCUSSION

This chapter will shed some light on the findings of the study. This chapter will also provide direction for future research endeavors that could stem as an extension to this study.

6.1 Research Overview

First and foremost, it is important to understand that most every organization will face barriers when it comes to knowledge sharing. Given that organizations comprise of individuals from various backgrounds, it is not unusual to come across individuals who are not comfortable sharing information on a public forum. These same individuals, when approached directly would probably be more than happy to tell you what they know. Thus, the organization must be sensitive to its employees’ personal inhibitions (introvert, shy, etc) that might be a result of ones cultural background. However, personal inhibitions such as a hesitation to contribute can be eliminated by constantly advocating and encouraging all knowledge sharing efforts. It should also be emphasized that sharing knowledge not only benefits other members in the team, but the entire organization as a whole. Management should constantly drive the message that ‘the strength of the company lies in the knowledge of its employees’. In many cases, although management realizes the importance of the knowledge of its employees, this is not broadcast to the employees. It is a moral boost for employees if they feel that their work and their contributions to the organization are recognized or will be recognized. It is very important for management to keep in mind that emphasizing the importance of their knowledge to the organization alone is not enough; they have to provide the required resources, such as time for knowledge sharing, database space to store information, etc.
6.2 Key Findings

Several barriers to knowledge sharing in the I/T department at Org X have been identified. These are:

- Lack of interest
- Personal inhibitions
- Lack of time
- Lack of perceived knowledge value
- Non-conducive company culture

Several measures have been identified to assist in eliminating these knowledge barriers. These are:

- Introduce controversial topics of discussion to the group
- Provide incentives
- Assign more aggressive moderators to discussion forums
- Management should encourage and advocate knowledge sharing activities
- Management should asset aside time dedicated solely for knowledge sharing activities
- Success stories from knowledge sharing activities should be published in the organization

Several knowledge sharing encouragement measures have been put in place at Org X at the time of writing this report. These are:

- A $45 best buy card is given to the individual with the most valuable contribution of the month on the discussion forums
- An “award for sharing” certificate is awarded to an individual with the most valuable contribution of the month on the discussion forums
- The I/T website provides links to that month's technology presentations
- An I/T newsletter provides links to that month's technology presentations
Just by a 'click of a button', employees can receive notification about new entries to the discussion forums.

In spite of having in place these measures to encourage knowledge sharing, no significant change has been identified in the level of knowledge sharing. This gap can be attributed in large part to the conduciveness of the corporate culture to encourage knowledge sharing activities. At present, it is observed that the majority of the employees in the I/T department at Org X comprise the peripheral group of the knowledge sharing process; the majority of the employees in the I/T department at Org X are silent watchers in the knowledge sharing process.

6.3 Research Contributions

This study contributes to the collection of literature on CoP’s, by confirming to some extent that the knowledge sharing barriers, such as lack of interest, lack of time, personal inhibitions, etc identified at Org X are in line with knowledge sharing barriers identified at other companies. This research also highlights the fact that in spite of having in place several measures to eliminate knowledge sharing barriers, there is still a 'gap' observed in the level of knowledge sharing and this gap can be attributed to the conduciveness of the corporate culture to knowledge sharing activities.

6.4 Limitations of the study

This study was limited to the I/T department at Org X. This limited domain may not have provided the 'complete picture' and may have kept some valuable information from being discovered. At the time of this report, since the suggested measures were not put into place to eliminate the knowledge sharing barriers, it cannot be said with absolute certainty if the level of knowledge sharing would increase.
**6.5 Future Research**

A future area of study would be to identify why a majority of the I/T employees prefer to remain in the background of the knowledge sharing process. It was identified that the ‘gap’ in knowledge sharing can be attributed in large part to the corporate culture. Further research could verify if in fact the conduciveness of the corporate culture to knowledge sharing does play a major role in knowledge sharing in an organization.

The SOC model can be used to understand why employees do/do not participate in the knowledge sharing activities. It would be interesting to monitor changes in levels of participation once some of the suggested solutions are put into practice. At the time of this study, it was noticed that the mainframe forum was the most active. The reason for high levels of participation on the mainframe forum can be attributed to the aggressiveness of the moderator to market the mainframe to her team. So, changes in levels of participation, if any, with respect to assigning more aggressive moderators to each forum, should be carefully monitored.

If the levels of participation in the knowledge sharing process increase, and a sense of community is developed among employees, a CoP could be established in the I/T department at Org X. Several measures could be put into place to increase the level of participation in knowledge sharing activities. It was observed that several individuals were protective of the information/knowledge that they had. These so called “gurus” were approached on a regular basis by their colleagues to answer questions in their field of expertise. An attempt has to be made to explain to these individuals the value of sharing knowledge with a larger group. In order to allow these individuals to maintain their “guru” status and see the value in contributing knowledge to a larger group and to the organization as a whole, they could, for example be
approached to be forum moderators. Thus, every time their ideas/solutions were implemented, their “guru” status would be reassured. Also, in order to allow employees to perceive the value of the contributions made to the forums, each contribution could have a rating feature associated with it. So, each contribution could be rated based on the value that it provided to the forum and all the employees who viewed it. In order to generate more interest among the employees regarding the forums, forum moderators could have a column dedicated to them in the I/T newsletter or I/T website where they could highlight forum activities. At the time of this study, it was concluded that if the levels of knowledge sharing were to increase and employees took a personal involvement in knowledge sharing, a CoP could be established in the I/T department at Org X.

If a CoP is established at Org X, the growth of the community through the Potential, Coalescing, and Maturing stage should be documented. At the time of this report, it can be inferred that if a CoP was established in the I/T department at Org X, it would be legitimized (recognized by the management/organization), supported (provided with resources), and institutionalized (given much importance in the I/T department’s decision making process). If a CoP is established in the I/T department at Org X, it would be interesting to see if these inferences are valid.
7. CONCLUSION

With an increase in today's world to gain a competitive edge in the market, companies are finding more value in preserving internal knowledge to gain and maintain this competitive edge. This is where CoP's come into play. CoP's can preserve the knowledge of an organization by pooling together individuals who share the same goals and are determined to build their level of knowledge through 'innovative interaction' (Wenger, 1998). One of the driving forces behind CoP's is the need to formalize and efficiently store the knowledge within the organization. What is knowledge and what are the various forms that it can exist in?

Knowledge can be present in both tacit and explicit form. Tacit knowledge is the knowledge that is personal to the individual; it resides with him/her. Explicit knowledge is knowledge that is in a form that everyone can understand (e.g., manuals, memos, emails, etc). The challenge lies in translating the tacit knowledge present in organizations into explicit knowledge that can be stored and shared by everyone in the organization.

CoP's grow and flourish from their members needs to gain and share knowledge among themselves, other communities, and the organization as a whole. CoP's are present all around us; some are formally recognized, others are unnoticed. Unknown to most of us, each one of us is a member of a community; work teams, associations, reading clubs, home owners’ communities, etc. A CoP has three aspects: domain, community, and practice, each of which is integral in the building of a community. There are several advantages associated with CoP's. These are:

- connecting local expertise and isolated professionals
- diagnosing and addressing recurring business problems that might be causing team boundaries
- aiming to identify the knowledge related sources of uneven performance across business units and establish a common standard
- linking and coordinating unconnected activities that address a similar knowledge domain (Wenger, 1998).

**Research highlights**

The research objectives of this study are two fold, practical and academic. The practical objective of this research is to establish a CoP in the I/T department at Org X. The academic objective is to:

- Highlight ways in which barriers to knowledge sharing can be identified
- Identify measures to eliminate the identified barriers
- Explain why the level of knowledge sharing remains “minimal”, in spite of putting into place measures to eliminate the identified barriers

In order to achieve these research objectives, several research instruments were used throughout this study. The research instruments used in this study are interviews and a facilitation session. In addition, participation on the Org X I/T forums and responses from surveys were monitored to understand the level of knowledge sharing among the Org X I/T associates. Research questions were formulated to help drive the research further. These questions are:

1. What are the barriers that prevent employees from participating in the knowledge sharing process?
2. What measures can be taken to overcome these barriers?
3. Can a community of practice be established if these barriers are overcome?
At the time of the study, several knowledge sharing activities were in place at Org X. These include:

- Development forums
- Technology exchanges
- Monthly newsletter
- I/T website

Based on the research instruments, the research questions were answered:

*What are the barriers that prevent employees from participating in the knowledge sharing process?*

- Lack of interest
- Personal inhibitions
- Lack of time
- Lack of perceived knowledge value
- Non-conducive company culture

*What measures can be taken to overcome these barriers?*

Several measures have been identified to assist in eliminating these knowledge barriers. These are:

- Introduce controversial topics of discussion to the group
- Provide incentives
- Assign more aggressive moderators to discussion forums
- Management should encourage and advocate knowledge sharing activities
- Management should asset aside time dedicated solely for knowledge sharing activities
- Success stories from knowledge sharing activities should be published in the organization
Can a community of practice be established if these barriers are overcome?

Some measures have been put into place at Org X to encourage knowledge sharing. These are:

- A $45 best buy card is given to the individual with the most valuable contribution of the month on the discussion forums
- An “award for sharing” certificate is awarded to an individual with the most valuable contribution of the month on the discussion forums
- The I/T website provides links to that month’s technology presentations
- An I/T newsletter provides links to that month’s technology presentations
- Just by a ‘click of a button’, employees can receive notification about new entries to the discussion forums

At the time of this report, discussions were under way to implement some more solutions such as,

- Soliciting more aggressive moderators for each of the five forums to encourage more participation
- Including knowledge sharing participation in each employee’s yearly goals report

Since these measures have not been put into place as of the time of the writing of this report, the influence that they will have on the knowledge sharing participation levels cannot be determined.

In the case of Org X, it was identified that employees were very helpful and were willing to share information if needed, but only on a personal basis. There seemed to be a ‘hidden bubble’ around each employee in terms of the information/knowledge that he/she possessed.

Observation shows that this ‘gap’ in knowledge sharing in organizations could be attributed in large part to the conduciveness of the corporate culture to incorporate and encourage knowledge sharing. At the time of the study, it was observed that if the levels of knowledge sharing were to
increase and employees took a personal in knowledge sharing, a CoP could be established in the I/T department at Org X

The study was limited to the I/T department at Org X. This limited domain may not have provided the ‘complete picture’ and may have kept some valuable information from being discovered. This study contributes to the collection of literature on CoP’s, by verifying that several companies share similar knowledge sharing barriers, such as lack of interest, personal inhibitions, lack of time, etc.

This research also highlights the fact that in spite of having in place several measures to eliminate knowledge sharing barriers, there is still a ‘gap’ observed in the level of knowledge sharing and this gap can be attributed to the conduciveness of the corporate culture to knowledge sharing activities.

This study opens up the doors for further research in this area. For example, it was identified that the ‘gap’ in knowledge sharing can be attributed in large part to the corporate culture. Further research could verify if in fact the conduciveness of the corporate culture to knowledge sharing does play a major role in knowledge sharing in an organization. Another area of research would be to document the growth of a CoP, if one were established. At the time of this study it was inferred that if a CoP was established in the I/T department at Org X, it would be legitimized (recognized by the management/organization), supported (provided with resources), and institutionalized (given much importance in the I/T department’s decision making process).
REFERENCES


Groupsystems website: http://www.groupsystems.com
APPENDIX A: Interview Questions

10 semi-structured interviews were conducted among individuals in the I/T department at Org X. The average length of each interview was 15 minutes. The interviews were limited to 15 minutes, to avoid imposing on the time of the employees. Interviews were conducted in an informal manner. The questions were open-ended, with the intention that the respondent was not restricted to what he/she wished to share with the researcher.

Q1. What is your opinion on the knowledge sharing processes in place at Org X today?
Q2. Do you think any knowledge sharing barriers exist? (If yes, Q3)
Q3. What do you think are some barriers that exist in the knowledge sharing processes?
Q3. Could you suggest some solutions to these barriers.
APPENDIX B: Facilitation Session

A facilitation session was conducted at Org X in order to understand the reasons why there was a minimal level of activity on the forums and possible solutions to the identified problems. The session comprised of 6 participants, the facilitator, and a chauffer. Below is the session outline guide. This outline is intended to serve as a guide for future facilitation sessions to be conducted at Org X.

Session overview

Participant Instructions

Please click the go button. Each of you will have an electronic sheet in front of you.

Please type an idea on the page. Press the submit button or the F9 button, when you are done. The system will randomly bring you a new sheet of paper with someone else's idea.

(1) You can either agree with the idea by adding more detail to it.

(2) You can enter a new idea

Please refer to any existing comments with the comment #.

*** Type in only idea per page and click the submit button or the F9 button.

Opening (5 mins)

- Goal
- Agenda
- GSS (anonymity, parallel communication)

Brainstorming on why there is not much activity on the forums (10 mins)

- EBS tool –free brainstorming
Script:
- Add to an existing idea
- Enter a new idea

**Fast Focus on why there is not much activity on the forums (15 mins)**
- Categorizer

**What could-be done to increase activity on the forums. (10 mins)**
- Setup: group outliner (participants enter comments, not topics)

Steps:
- Post the title “Forum Activity”
- Open up participant screens
- Give the group the “could-be” prompt
  - What could be done to increase activity on the forums (based on the list of problems identified)

**What should-be done to increase activity on the forums (15 mins)**
- Give the group the should-be prompt
  - Looking at the screen in front of you, would anyone like to propose an action that we should take as a team
Closing (5 mins)

- Session summary
- Next steps (other participants)
- Session evaluation
APPENDIX C: Survey Questions & Responses

A brief survey was appended to each audio tech exchange presentation that was published on the I/T website and the I/T newsletter. Below is a list of the survey questions:

**Survey questions**

1. Did you attend the (month) Tech Exchange?
   
   Yes/No

2. The (presentation name) was informative.
   
   Strongly Agree  Agree  Neither Agree nor Disagree  Disagree  Strongly Disagree

3. The (presentation name) will be helpful to me in my job.
   
   Strongly Agree  Agree  Neither Agree nor Disagree  Disagree  Strongly Disagree
## Survey responses

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SA: Strongly Agree  
A: Agree  
NA: Neither agree nor disagree  
D: Disagree  
SD: Strongly disagree

Table 2: Survey responses
APPENDIX D: I/T Forums

5 development forums have been created:

- I/T Application integration developers forum
- I/T Java developers forum
- I/T Mainframe developers forum
- I/T .Net developers forum
- I/T Security development forum

Below is a screen shot of the Java forum:

![Image of Java forum](image)

Figure 11: Java forum

Each forum has a moderator who ensures that the questions that are posted on the forum are answered in a timely fashion. Each forum has some seeded questions that are aimed at building interest and encouraging participation.