A STUDY ON INFORMATION TECHNOLOGY ALTERNATIVES THAT AID ORGANIZATIONAL CULTURES AND SUBCULTURES TOWARDS A MAXIMIZATION OF FLOW AND CREATION OF KNOWLEDGE

TESIS

MAESTRÍA EN ADMINISTRACIÓN DE TECNOLOGÍAS DE INFORMACIÓN

INSTUTUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY

POR

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JUNIO DE 2002
INSTITUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY
DIVISIÓN DE GRADUADOS EN ELECTRÓNICA, COMPUTACIÓN, INFORMACIÓN Y COMUNICACIONES

PROGRAMA DE GRADUADOS EN ELECTRÓNICA, COMPUTACIÓN, INFORMACIÓN Y COMUNICACIONES

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Este trabajo es requisito para obtener el título de Maestro en Administración en Tecnologías de Información

INSTITUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY

JUNIO DE 2002
Dedications

To my parents Jesús & Celina:
For giving me the opportunity of becoming a complete person by giving me always all the best and what I needed. Mother, you have taught me how to love life; you have always been there for me so that I could become whatever I wanted. Father, you have taught me the value of knowledge and how important it is to be a man of good.

To Graciela:
For keeping me from falling and for making me remember where I am going.

To my family:
For allowing me to learn so much from you.
Thanks

To my supervisor:
Thank you Koquis for living me the time I needed to write my thesis and for allowing all of my delays and my passion for doing things always to the last minute.

To my teachers:
Thank you for being persons from whom I learned so much throughout my studies. Also for having accepted my thesis after so long.

To my friend:
Arturo, thank you for helping me find a place where I could carry out my research. Cheers.

To the interviewees:
Thank you for the time you offered me and the chance to know you and learn from you. Your support was crucial to the making of this thesis.
Summary

Throughout history man has evolved in ways that are difficult to find in any other species. It may be that the ways and the degree of sophistication of this evolution are what make us so special and one example of this is the technology we have developed. It is seldom found in other species changes as drastic in their sociology as we have experienced by the invention of our tools. The tools we use help us define periods in history, give entire peoples the advantage over others and modify the way that we define our world; they make us see things we otherwise would have never seen and make us interact with each other in ways that we never imagined. But somehow we have evolved very little in biological ways and in the way we feel about each other. Anger, hate, love, respect, feelings and concepts we know even before we learn to talk and use the tools we love so much. And so we have had few relative advances in the ways that we developed our social tools, tools that have helped us learn as a species: language, culture, social structures.

This work is based on the fundamental elements of evolution: knowledge, relationships and organizations. Evolution is the consequence of having placed an organism in an environment where the survival of such organism is not guaranteed by any mean and knowledge is a necessary element for evolution. In our context the organism is the organization in question, that not unlike any other biological organism is composed of living breathing elements. The current commercial landscape is an averse environment, and if modern organizations want to survive then they should consider embracing evolution as their means for survival.

The knowledge we need is embedded in our organization, it thrives on the relationships that are built by those who are a part of it. It is present in every single decision we make, from the shop floor, to the very head of a corporation. We have learned to harbor it in some ways, somehow grasping the few aspects of it that are tangible; patents and brands have been with us for quite some time, and this is only because we have seen their presence reflected in financial reports, expressed in profits and losses. But there is more knowledge that is harder to grasp, it develops, explodes and evaporates in the minds of every employee. But somehow, through very “old” methods it can be observed, exploited, kept and built. These methods are our social relationships we generate among our coworkers. But still we haven’t got the hold we should of these mechanisms. Perhaps controlling them is not the strategy we should follow.

Yet we do have information technologies. They are already used in our every day operations, sometimes they are absolutely necessary. And through these technologies we can support our social mechanisms. Through this support we will profit from the knowledge created. This work is about how IT could help in doing just that: helping organizations survive.
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CHAPTER 1
– Introduction –

Much has been discussed about the stages of development of information technology and how we have arrived to the point where what we are trying to channel is knowledge, leaving behind traditional information and transactional systems. New technologies make it possible to implement information systems that were difficult to execute in the past, this enables the management of multinational and international organizations in this new world of globalization. Nevertheless, all of these global market and environment conditions require organizations to learn faster than how they are accustomed to even today. Learning is nothing more than the acquisition of knowledge, or the creation of knowledge as some like to state, knowledge is the key factor that enables evolution. Here is where the main problem that our new knowledge era proposes and is made evident; working with knowledge is not as easy as working with data or information.

Knowledge is not something that could easily be collected during the productive process and piped in data lines for its distribution and presentation in the quarterly report. Manipulating knowledge presents us with new challenges not only to companies but to information technologies and those in charge of implementing them as well.

Before this new landscape, technology companies and software houses have relied on re-branding their products and services masking them as knowledge solutions. What before were known as collaborative work tools now are knowledge management systems. Very probably this may be true given the appropriate perspective, although this can rarely be seen in actual functioning conditions and in an effective manner in the average organization. Regularly technology is acquired and very little is done towards an adequate implementation. This can be due to the fact that knowledge is not an inherent product of information systems and rather of the individuals within the organization, this opposed to data or information that are the expected product of common information systems. The importance of the people sitting in front of these new systems is now more evident than ever and not as it somehow had been thought at the beginning of the information technology era.

When we talk about people information systems fade to the background. Humanity by nature has devised its own schemes, its own communication and information systems, and what are more important, knowledge systems. Social culture is nothing more than a manifestation of that knowledge that in a collective fashion or particular belongs to groups of people denominated as cultures, or sub-cultures in the case of organizations.
Every organization of large proportions experiments this social phenomenon where groups belonging to a department, or even more than one, share a series of distinctive social and special traits that supercedes the general culture common to an organization. Information systems given this environment can support these organizational cultures to empower these natural capacities for knowledge creation and transmission, and in doing so support in kind the company's development without becoming themselves in reasons for extra work for the members of the organization.

1.1 Objective

The objective of this study is to delve into the ways in which knowledge can or is created inside groups of people that make up organizational sub-cultures and the role that information technologies play or could play in the future. This study represents an effort in studying the alternatives that arise when deciding on supporting our organizational sub-cultures, expecting to produce positive results by presenting users favorable knowledge creation conditions in their workplace.

1.2 Breadth of this study

This study was conducted having a particular objective in mind. To achieve such an objective and keeping in with the available resources certain reservations had to be made. A field research procedure and characteristics had to be proposed and those were stressed by the availability of subjects that met the required research conditions. Since the procedure devised for research purposes involved individuals, organizations and their processes, the information gathered by the research instrument was subject to the disposition offered by those involved, and for the matter of confidentiality also other reserves had to be met.

Regarding the scope of the study, the multidisciplinary nature of the subject selected, the depth with which the topics are covered in this work had to allow for other topics as well and so as to not delve too deeply and compromise the main objectives of the study. During the buildup of a theoretical reference the amount of attention to each relevant topic was intended so that an average depth throughout all topics could be constant, or at least to an extent with which the work could profit from their surfacing.
1.3 Final product

In light of the theoretical and field research, at the end of this study, we will arrive to an analysis of the elements that interact and support sub-cultures towards the creation of knowledge in the organizational culture context. This analysis will hopefully be of aid in providing means to support an organization’s success.

1.4 Organization

This work is divided into chapters, each chapter addresses a particular aspect of the study and they are ordered in a progressive, simple fashion.

We start in this chapter (chapter one), by a brief introduction to the subject of the work and its characteristics. In chapter two (2) the focus is on outlining the available literature need to support our study. Then we will devise a research instrument in chapter three (3) that will help us observe the way that this theory is present in the common organizational setting. The results of such research will be studied and analyzed in chapter four (4) in order to provide ampler backdrop for considering the role of information technologies in the sub-cultural knowledge creation and transference process. Chapter five (5) represents the substance and product of this work, in it the basic considerations that can be met for successful knowledge creation in the cultural context of our organizations. Closing the study in chapter six (6) with a recapitulation of what has been done not without first having suggested the routes that could be taken for future studies and the wide resources that have yet been left untapped by this study.
CHAPTER 2
–Theoretical Background and Support –

2.1 Introduction

Rather than describing basic definitions of the concepts required to provide the theoretical reference for this study we will discuss the most recent concerns of researchers and administrators alike that relate to the study subject matter, these discussions shall provide enough background to understand the relevance of our objective. Although, an understanding of the elements involved in the study is crucial, therefore the fact will not be overlooked.

We will initiate by stating current views on organizational theory since it’s the ground where the observed phenomena takes place, also the expected findings should provide useful information to further the well being of organizations themselves as well as the individuals within them.

2.2 Organizations

2.2.1 Objectives and drivers for change

Current organizations are striving to redefine themselves in a way in which they can achieve greater levels of success. As Symon (2000) has stated, many authors have tried to define newer organizational structures, or at least point out a probable path for organizational growth. Among various ideas of future organization are Nonaka’s and Takeuchi’s “Knowledge-creating Company” (Nonaka & Takeuchi, 1995; cited by Symon 2000), the network organization described by several authors (Miles & Snow, 1986; Nohria & Eccles, 1992; cited by Symon 2000), and the virtual organization described by Heckscher & Donnellon (Davidow & Malone, 1992), as cited by Symon.

Continuing with the author’s thoughts on the reasons behind this urgency for change, the sources of this momentum are ignited by social and economical phenomena such as globalization, the emergence of an information economy and environmental change. As a major tool for these transformations, information and communications technology are considered as essential components (Fulk & deSanctis, 1995; Rockart, 1998) (we will discuss information technologies later in this chapter). Symon paraphrases Drucker (1988), Hinds and Kiesler (1995) and suggests alternatively what these authors state, that these information
technologies are what is really demanding organizations to adopt new ways of working, making of this a matter of survival for modern organizations; an inbound (e.g. environmental technological forces) outbound (e.g. organizational objectives) flow of technological influence over organizational structures. To support this influence the author borrows Fulk and deSanctis (1995) views on how a “lack of expectation of permanence” in the organizational culture¹ as the agent enabling organizations to learn from their environments (we will later discuss the importance of organizational culture relative to its processes and structures). Winograd and Flores argue about the same driver for the cognitive process of organisms, in their autopoietic system (an idea taken from Maturana and Varela, 1980) it’s the organism’s mortality and its relationship with its environment that forces the learning and evolution to take place (Winograd & Flores, 1986)².

The reason the network organization is somewhat relevant to this study is because of the supposedly inherent “interconnection” between the network organization’s members as hierarchies and boundaries are not as rigid as in a typical organization, communication among its members is not ruled out by occupational boundaries. Work is more likely to be carried out as a team effort in these settings (Symon 2000 on Rockart & Short, 1991).

Knowledge plays a key role in the new organizational theory. Drucker (1988) is one of the promoters of this idea. The knowledge-based organization is to him a place where specialized professionals are self directed and rate their own performance based on information feedback from internal as well as external sources. For this the business relies on an information-based organization.

So we understand the relevance of culture within organizations as it conditions it to learn and adapt; communication among its members will enable that culture as implied by the definitions of modern organic structures. Furthermore we will briefly comment on this array of important elements, to which we will add other two important organizational enablers: knowledge and technology. We will do so from the organizational perspective to underline their relevance within this subject. All of these will be analyzed by themselves later in this chapter as their importance is sufficiently suggested by our readings and their understanding is crucial for our study’s success.

### 2.2.2 Technology and organizational structures

Recapitulating on the relationship between new communications technology and organizational structure we can understand its incidence on the modern organization.

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¹ Defined later.
² Almost intrinsically related concepts.
“Today’s organizational structures... demand extensive communication. They are facilitated, in fact made possible, by the vastly increased communication and coordination capability now available through information technology. Without information technology, it is highly doubtful that many of the organizational changes and experiments underway could exist.”


Although Symon clarifies that some authors dismiss the possibility of technology determining one organization’s structure (Grint & Woolgar, 1997; Knights & Murray, 1994) he also cites others who even though not as strongly state that there are such factors like technology that shape organizations today (Majchrzak and Borys, 1998).

### 2.2.3 Knowledge and organizations

The new organizations are urged by most contemporary authors (e.g. Symon 2000) to exploit the knowledge as a resource provided by the individuals inside it. Even aspects as crucial as competitive advantage are determined by how this knowledge is harnessed. In order for this to take place or provide any value Symon reiterates the need for connectivity and communication between an organization’s members. He also deems important the value of individualism and its integration with connectivity for modern organizations.

Von Kogh, Ichijo and Nonaka (2000) as we will later observe, emphasize on the importance of the creation of the right context for knowledge creation since it depends entirely on context to gain any relevant meaning (Sackmann, 1992). Given this the right organizational structure can greatly improve the knowledge creation activities inside organizations (Von Kogh, Ichijo & Nonaka, 2000).

Drucker (1988), as mentioned earlier, discusses the changes that have taken place in recent years in organizations given the new set of environmental rules that apply. In his vision of an information-based organization, organizational structures tend to flatten hierarchically, for the need of a more specialized work force at the operational level, with different self-managing conditions than those of the vestigial military organizations, require less specialized top management employees. Traditional departments in this novel settings function as standards managers and most of the work is carried out by self-guided teams, task focused and interdisciplinary. It emphasizes that relationships and communications play an important role in creating a right framework for these teams and conditions to

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3 Drucker does not precisely describe these teams with this term. It is not to be confused with other work on this subject.
develop successfully. In regard to this sort of teams Nonaka and Takeuchi (1995) also point out that being created informally accentuates their possibility of success.

2.2.4 Culture and organizations

Senge (1990)\(^4\) expressed that importance of culture lies in that it is a sort of "filter"\(^5\) with which individuals, and organizations as well, interpret input from the environment, what they hear, see and experience. This along with his statement that these social units have a natural tendency to reject concepts that do not fit with their basic concept of reality draws our attention to culture inside organizations.

Culture within organizations is referred to by most authors as Organizational Culture and by itself is a quite demanding area of study and much effort has been focused on its analysis and understanding\(^6\). It is the subject to which we will draw most of our attention in our studies and event though we will need a basic understanding of culture as a social phenomenon, its elements and mechanisms, we will strive to remain inside the boundaries of an organizational context.

2.3 Organizational Culture

It is understood by several writers and researchers on organizational theory that the concept of culture is a key to the success and failure of organizations, through its effect in the implementation of projects such as organizational innovations like quality improvement and reengineering (Detert, Schroeder & Mauriel; 2000)

A definition of organizational culture is in order and we will rely on work by Schein (1990) on the subject (Zoran Sušanj & Edvard Konrad 1995/96). Organizational culture is a set of shared values, beliefs and basic assumptions which determine the nature and style of interaction amongst people inside organizations and the way they carry out their work. Relationships between commitment, satisfaction, conflict resolution and organizational culture have been stated and more importantly to an “overall organizational effectiveness”.

So the origins of organizational culture become relevant given this frame. Hofstede (1991) points out an influence of national culture since it spawns language, history, education et cetera (Zoran Sušanj & Edvard Konrad 1995/96).


\(^5\) Senge never expressed it as a filter, it’s an interpretation of his concept on how culture defines the acquisition of knowledge by social units.

\(^6\) Many of the authors cited in this chapter make a point related to organizational culture.
Shedding some light on the elements that constitute organizational culture are texts form Schein\textsuperscript{7} (1987) again; later we will observe that these are also considered to be constituents of basic culture itself. A substantially abstract description of these elements is given by Schein as he divides them in three aspects. They might as well be called levels for a clear relationship between levels of abstraction and their classification can also be established\textsuperscript{8}. The first aspect being the organization’s assumptions related to its environment, reality, space and time. These are also described by him as the base of culture, with this hinting at a hierarchical relationship of the parts. He states that this aspect is difficult to discern because it is taken for granted. It is important to note that the nature of human activity and relationships is also a part of this layer. The second aspect is derived from the first as it is made up of the organization’s values which he explains are a formed from basic assumptions. The third aspect (Scheins signature) consists of what he calls artifacts which are technology, art and actual behavior.

### 2.3.1 Culture

We agree with Detert, Schroeder, Mauriel (2000) in citing Alexander (1990) in that views of culture by most researchers coincide that culture has been studied as an autonomous phenomenon that can be isolated for analysis and comparison. Through this lens, the various resulting definitions of culture share a common set of elements not very unlike those formerly discussed by Schein’s analysis, values, artifacts, beliefs and basic assumptions are again mentioned (Cooke & Rousseau, 1988; Gordon & DiTomaso, 1992; Rossman, Corbett, & Firestone, 1988; Rousseau, 1990; Schall, 1983; Schein, 1992; Schwartz & Davis, 1981; cited by Detert, Schroeder & Mauriel, 2000). Culture is therefore referred to as the “social glue” of organizations (Golden, 1992; Smircich, 1983; cited by Detert, Schroeder & Mauriel, 2000).

“Although there is as yet no single, widely agreed upon conception or definition of culture, there is some consensus that organizational culture is holistic, historically determined, and socially constructed, and it involves beliefs and behavior, exists at a variety of levels, and manifests itself in a wide range of features of organizational life.”

James R Detert; Roger G Schroeder; John J Mauriel; 2000; based on: Hofstede, Neuijen, Ohayv, & Sanders. 1990; Pettigrew, 1990


\textsuperscript{8} A relationship between these aspects of organizational culture and intellectual capital as described by Sveiby and the Skandia Navigator will later be discussed in this chapter.
Again sharing the views of Detert (et al) we will cite the following definition of culture as a practical working reference:

"a system of shared values defining what is important, and norms, defining appropriate attitudes and behaviors, that guide members' attitudes and behaviors"

(O'Reilly & Chatman, 1996).

Given all this variant definitions and asseverations of culture and the yet not many conclusive details, the elusive concept of culture, as well as that of knowledge, is used open mindedly by most administrators and consultants. Culture can be observed in most organizational settings.

Another consequence of the many definitions of culture and their conceptual descriptions is that it has been found that culture is difficult to “operationalize” in an organizational setting. Past and current research on the subject of culture has focused its components from an empirical viewpoint or mostly theoretical in nature. Still much work is needed to answer some issues that remain undiscovered (Sackmann 1992).

De Long and Fahey (2000)\(^9\) enumerate three aspects where culture can be deducted from, surely because of the illusive nature of culture and its intangibility, there is no such thing as studying culture first hand. Values, norms and practices are where we can perform cultural analysis as it is reflected in them. As we can observe, this is not very different to what Schein has to say about organizational culture, if not a bit more practical.

We will profit from De Long and Fahey’s description for culture’s elements and explain these three elements of culture. Norms are derived from values and are easier to discover since they guide what people behave in the organization. Practices are the most visible elements of a culture. They represent the way people do things inside organizations like addressing each other, making reports. Interestingly these include formal situations in organizations as well as “out of office” rituals and behaviors. Values are the first and bottom part of culture in an organization. They shape norms, and norms become practices. It is possible for managers to change norms that in time will redefine values and thus this relationship is explained where the product can also modify its producer.

Adding more ideas on the composition of culture, we agree with Homburg and Pflessjer (2000) in what they have to say about the elements of culture. Norms have a higher degree of specificity than that of values (Katz & Kahn; 1978). They define norms as expectations of behaviour from a social group (O'Reilly, 1989; 1989; Thibaut & Kelley, 1959). Artifacts consist of stories, arrangements, rituals,

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\(^9\) “Diagnosing cultural barriers to knowledge management”; The Academy of Management Executive; Ada; Nov 2000; David W De Long; Liam Fahey;
and language that are originated in an organization and have symbolic meaning (Schein, 1992; Trice & Beyer, 1993).

"a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means, and ends of action."

Kluckhohn on Values (1951) cited by Kekäle 1999

One interesting phenomenon that occurs in organizations today is the subculture manifestation. This is a central part of our study and a description of its properties and reasons will be useful in constructing out hypothesis.

### 2.3.2 Subcultures in organizations

Schein (1996) states that there are such things as subcultures within an organization’s general culture. Kekäle (1999) explaining Schein’s work on the subject for his research on culture’s effect on success of management projects implementation, specifically total quality management\(^{10}\), enumerates three different subcultures hidden in organizations. These hold descriptive titles, though I believe can be easily replaced by others given any organizational context, “operators”, the “engineers”, and the “executives”. Schein describes that these cultural groupings differentiate amongst themselves by having their own set of basic assumptions of some “very central areas of reality”. What is most interesting about Schein’s views is the impact on knowledge creation and learning that these subcultures have as stated in the following text:

"What this line of thinking leads to is the possibility that the organization as a unit may not ever be able to be a reliable learning system unless it reconciles the built—in conflict between these three cultures"

Schein 1996 cited by Kekäle 1999

De Long and Fahey (2000) believe that cultures and subcultures, specially, influence what member of an organization will perceive as useful, important and valid with respect to knowledge. Therefore the relevance of knowledge is determined by an organizational culture or subcultures. These ideas about the relationship of knowledge and culture will be discussed more deeply later.

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\(^{10}\) Dr Tauno Kekäle, “The effects of organizational culture on successes and failures in implementation of some total quality management approaches.”, Bristol Business School Teaching and Research Review, Issue 1, Autumn 1999.
Specific groups in organizations can develop their own set of norm, values, and practices, in other words their own culture, apart from the organizations overall culture. These groups may be defined by departmental boundaries, job description, level and function as well as geographical remoteness or closeness. They can also be easily distinguished. Organizations actually do have both, cultures and subcultures but this does not necessarily mean that an organizational culture is the composition of a set of organizational subcultures alone. The level of influence of an organization’s “general” culture on its subcultures and the relationship between different subcultures varies across organizations (De Long & Fahey; 2000).

De Long and Fahey also agree with Schein as they prove that subcultures “often lead their members to define important knowledge” and this apparently occurs in a different manner through different groups in an organization. They in an example describe how having a different set of values to define important knowledge can be the source of miscommunication problems and develop conflicts amongst organizational functions and thus affect the organizations well being.

Not only is the importance of some knowledge over other determined by sub-cultural groups but also help relationships since having similar perceptions within a functional subculture aide in making people inside same workgroups to rely on each other (Contractor, Eisenberg, & Monge, 1994; cited by Rice, Collins-Jarvis, & Zydney-Walker; 1999).

Subcultures also determine some very important aspects of an individual’s life. The process of self-categorization is what defines a person’s self-image or concept of self and is influenced by that person’s membership to social groups (Chatman, Polzer, Barsade & Neale; 1998). Also self-categorization can be situational, some aspects of a persons self-concept can be more noticeable dependent on the characteristics of others around him while something occurs (Markus & Cross; 1990). Also a person can define one-self dependent on how he is regarded as a member of some or other social group (Brewer; 1979). Also members of a group to which the individuals find an attachment as described above are more likely to cooperate amongst themselves and compete with other groups (Wagner, Lampen, and Syllwasschy, 1986).

The importance of these subcultures and groups, not only to define themselves as individuals as explained above, but also an organizational effect is suggested by the following ideas borrowed from Chatman.

As we said before communication is important to an organization’s proper functions but cooperation among its members is important for that organization’s survival (Simon, 1976). We also said that cooperation among members of group is a result of its members feel of relation to the group, therefore aiding individuals to identify their own “in-group” is important as well as understanding the factors that influence people to perform this categorizations. Increasing this perception of pertinence to a group will therefore augment this crucial cooperation.
Because of these reasons some authors prefer a “collectivistically oriented” organizational culture rather than an individualistic organizational culture, given the fact that in such a setting, some individuals distinguish themselves as part of an “in-group” just by being part of the organization itself (e.g., Wagner, 1995). Communication, connections between individuals and interdependence is not highly valued in individualistic cultures (Markus and Kitayama, 1991).

2.4 Knowledge

“Knowledge is the only meaningful resource comparing it with labour, capital and land”

(Drucker 1993)

We will now discuss the characteristics of knowledge and its relevance to our subject. Later we will establish the connections between knowledge and culture and their role in organizations.

“knowledge is dynamic, relational, and based on human action; it depends on the situation and people involved rather than on absolute truth or hard facts.”

(Von Krogh, Ichijo & Nonaka, 2000)

“Knowledge… is a product of human reflection and experience.” It is a resource that can be found inside individuals or a group of them but what’s more interesting knowledge can also be found embedded in a routine or process; also language, stories, concepts, rules, and tools have knowledge as their principal ingredient (De Long & Fahey; 2000).

Knowledge may possess by itself a certain character of truthfulness within it. Nonaka and Takeuchi (1995) at least recognize that people regard knowledge as true but rather because it constitutes a “belief” that may be justifiably true based on the observer’s own experience with her environment. An interesting aspect of this phenomenon is that it relies on an individual’s unique viewpoints, sensibility and experience, therefore pointing out the importance of individuals in the knowledge creation process (Von Krogh, Ichijo & Nonaka, 2000).
2.4.1 Classifications and Types of Knowledge

An important concept that we should consider discussing further, is that of the basic classifications of knowledge as explicit or tacit. “Explicit knowledge can be codified and embedded in formal rules, tools, and processes. Tacit knowledge is what we know but cannot explain.” Explicit knowledge therefore is more easily handled than tacit knowledge but the importance of one over the other is not implied by this. Although Nonaka and Takeuchi (1995) explain in their work that Japanese companies acknowledge that explicit knowledge is only “the tip of the iceberg”. They understand that knowledge is fundamentally tacit. Tacit knowledge is intricately related to an individual’s personality and therefore hard to communicate with others. Tacit knowledge is related to senses and physical experiences. What is very valuable about Nonaka’s and Takeuchi’s work is the definition of the process of creating organizational knowledge which takes place when tacit knowledge is converted to explicit by expressing it with letters and numbers. Recognizing the value of tacit knowledge and conveying ways in which to apply this knowledge is a key challenge in knowledge-creating companies (Von Krogh, Ichijo & Nonaka, 2000).

There are some other classifications of knowledge that are important to mention. There is human knowledge and is basically what persons know what to do or know. Also known as individual knowledge is perceived in skills, expertise and is made up of tacit and explicit knowledge. It also may be represented in physical abilities such as, hand-eye coordination and knowing how to drive, or in conceptual and abstract cognition (De Long & Fahey; 2000).

There is social knowledge which exists in relationships between persons or inside groups. It is suggested that the knowledge shared in a group of members is more than the sum of the individual knowledge of the team’s members. It is a development of people working together and is mostly tacit in nature.

There is also structured knowledge which is knowledge that lies inside the organizations systems, processes, tools and routines; in other words the organizations functional infrastructure. The nature of this knowledge is explicit. A special characteristic of this knowledge is that it exists independent of humans.

“The knowledge that is embedded in routines, systems, and tools, and that requires minimal human intervention to perform an activity, is different from information, such as that found in books, manuals, and databases. These resources, no matter how highly analyzed, only become practical knowledge when individuals can apply their own experience and contextual understanding to interpret the details and implications for action.”

(De Long and Fahey; 2000)
2.4.2 Society and Culture’s Relationship with Knowledge

Takeuchi and Nonaka (1995) in their Knowledge-Creating Company studied various scenarios of knowledge conversion. They view mostly the tacit-explicit classification of knowledge and that most knowledge related activities revolve around these conversion processes. Based on the transitions of state they classify these processes as socialization, externalization, internalization, and combination. We will focus on the socialization process as it can be deemed as more relevant to our study. It is the most uncontrollable of processes and it is this process that makes up most of the “manage conversations” knowledge enabler (Von Kogh, Ichijo & Nonaka 2000) that we will later discuss.

Socialization is a way to name the process that occurs during the transition of tacit knowledge to tacit knowledge; this may be somewhat confusing since there is no real analogy that suggests a change of state (i.e. gaseous form to aqueous form) since it actually doesn’t occur, it is rather a change in nature and receptor of such knowledge. The use of language to transmit this kind of knowledge is not necessary. “Socialization is a process of sharing mental experiences and thereby creating tacit knowledge such as shared mental models and technical skills” (Takeuchi & Nonaka, 1995). It is through a combination of shared experiences and imitation that such transference can take place. Context comes up again as determining factor for these processes to succeed. There, the correct organizational settings play a key role in the nature of knowledge flow. Here we shall introduce the concept of microcommunities of knowledge; groups of workers or employees within a firm that profit from the process of socialization and build relationships that enable the flow of knowledge amongst its members (Van Kogh, Ichijo & Nonaka, 2000).

These groups are integrated by groups of individuals that do have productive work responsibilities and somehow have a distinctive work relationship among members. An interesting aspect of microcommunities of knowledge (Von Kogh, Ichijo Nonaka, 2000) is that over time they will develop their own set of rituals, languages, norms and values, not very unlike the definition of sub-cultures\textsuperscript{11} (Schein, 1992; De Long & Fahey, 2000). But what really underlines the relationship between these two concepts is what Von Kogh (et al, 2000) based on Jean-Paul Sartre (1976) hints at the possibility of this kind of groups to flourish by themselves and exist no only by a predetermined organizational device but rather by the individuals’ self guidance.

\textsuperscript{11} see Subcultures in Organizations earlier for more on definitions of culture
Since culture, as we have evidenced its important role in knowledge creation, is a collective phenomenon but also held by individuals, a deeper analysis on how culture influences cognition, the acquisition of new knowledge, in a personal and collective level will help us understand the nature of the relationship of knowledge and culture.

Sackmann (1992), as referenced earlier, based his research on Seiler (1973) as he described sense making, at a personal level, individuals rely on a proprietary frame of reference or cognitive structure and devices to aid them in the interpretation of what they perceive from their surroundings and situations. The devices he enumerates are the following: one, labels, descriptions of things or events; two, explanations, about events; three, lessons, or recipes on how to do certain things; four, reasons, for the happening of events (Heider, 1958; Spradley, 1980). These are not supposed to function apart from each other and rather belong as a part of a scheme (i.e. Piaget, 1954), a plan (Miller, Galanter, and Pribram, 1973), or a cognitive map (Tolman, 1948); paraphrased by Sackmann (1992).

There is a difference between collective sense making or cultural cognitions and individual. The collective cognitions are held by a group of people, and even though they share a culture they don’t have to be always aware of what is it that they share among each other. When individuals immerse in a culture, some cognitions are embedded in the group and after a while come to exist independently of an individual group member (White, 1959)

2.4.3 Cultural Knowledge

Commonly held cognitions accumulate in the form of cultural knowledge. There are four different kinds of cultural knowledge: one, dictionary knowledge, two, directory knowledge, three, recipe knowledge, and four, axiomatic knowledge. These are not very unlike individual cognitions mentioned above.

Dictionary knowledge is made up of descriptions and labels, the words used and definitions in an organization. It refers to factual things in an organization. They reflect meanings and signifiers (Broms & Gahmberg; 1987) and are acquired step by step (Schutz & Luckmann; 1975).

The second, directory knowledge, are commonly held practices. It represents the way specific things are solved, the steps needed to carry out some action or resolution, their cause and effect, the “how”; all this in an organizational context.
Recipe knowledge is similar to prescriptions for repair. It refers to what should be done given a certain situation, how it should be solved. An example is what should someone have to do to get promoted. No unlike cooking recipes it contains the several ingredients to achieve one objective or other within the organization. It is related to norms.

The last one is axiomatic knowledge and it contains reasons and explanations “of the final causes perceived to underlie a particular event.” They are similar to mathematical axioms that cannot be further reduced. It represents the “whys” of events and things (Sackmann; 1992).

Culture, in general, represents non explicit norms or rules concerning the flow of knowledge throughout organizations and between its individuals. It dictates what knowledge belongs to the organization and can be transformed, from human knowledge to structural knowledge (De Long & Fahey; 2000). Such strong influences of culture and knowledge inside organizations suggest a need for managing these forces. Knowledge management constitutes a relatively new trend in management that focuses on these concepts aiming at better organizational performance.

2.4.4 Knowledge Creation in an Organizational Context

There are, according to Nonaka and Takeuchi (1995), five basic steps for knowledge creation in an organization; these are shown in figure 1.1.

To them, and as a definition we will be working with during this study, the process starts with the sharing of tacit knowledge. They consider this to be an ample source for knew knowledge. Since sharing tacit knowledge is not a simple task, the authors suggest that a “field” must be provided in order for this step to be carried out successfully. Sharing a common ground may be beneficial for knowledge sharing among an interdisciplinary group, as they mostly are in organizational settings. Self-organization of these groups seems to is pointed out as a good way of providing with this field since the sharing of a common goal builds the interest of all participants.

Creating concepts constitutes the second step, in which the change from tacit to explicit knowledge takes place; it is related to externalization such as the first step is related to socialization. The concepts which are created in this step are a product of the whole team’s effort and are embodied in documents or clear verbal expressions (such as explicit knowledge is in essence). These products are

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12 See “Classifications and Types of Knowledge” earlier.
13 See “Society’s and Culture’s Relationship with Knowledge” earlier in this chapter.
devised by the implementation of deduction, induction, and abduction as reason’s tools, all within the framework of dialog.

The third step involves a screening process. Apart from the continual justification of ideas that takes place inside groups, the Nonaka and Takeuchi (1995) suggest that there must be a formal justification of the concepts created through this process. The application of practical business criteria, such as cost and profit expectations, should be carried out and designed by senior management. In this way the organization guarantees that the knowledge being created is for its own benefit.

The fourth step is the actual building of an archetype, or a prototype in the case that the new knowledge represents a new product idea. Much like the drawing of a design plan the whole idea is drawn to its working detail, be it a new product or a new organizational structure, a physical working model for the first or an organizational chart with full job descriptions for the latter.

The final step would be that of cross-leveling knowledge. Cross-leveling comes from the possibility of using this new knowledge, tested and built, and applying it in other organizational levels, be them vertical or horizontal. Nonaka and Takeuchi (1995) even comment that the opportunity for making this knowledge accessible inter-organizationally. This step can help seed new knowledge creation processes inside the organization.

2.4.5 Knowledge Creation as a Social Process

Knowledge creation is a social as well as an individual process, it is because of the need for a third party to transmit tacit knowledge too that the conversion from tacit to explicit takes place, along the way new knowledge is created (Von Kogh, Ichijo & Nonaka, 2000). This has also been overly emphasized by Nonaka and Takeuchi (1995), they state that, trough real life examples, organizations can not create knowledge without the interaction that takes place within groups in
organizations. “Knowledge can be amplified or crystallized at the group level through dialogue, discussion, experience sharing, and observation.” (Nonaka & Takeuchi, 1995)

Very relevant work on the way that people in organizations create knowledge from the relationships they have with their coworkers was carried out by Wenger (1998). To him people working together for groups that he labels as communities of practice. Individuals in these communities share circumstances, and they learn from each other the way things are done, somehow this is related to the context you need to create, as Von Krogh, Ichijo and Nonaka (2000) state, we will discuss this later when describing knowledge enablers. An interesting thing to note about Wengers descriptions is that in his shortest description of these groups he points out that inside them, workers explore the meaning of their work and develop a sense of being as a worker; this is, as we can see, not very distant from what we have mentioned earlier related to cultural knowledge and its types. Therefore in a way, these communities could be considered cultures or subcultures to a certain extent.

“The group you actually work for is a relatively small community of people who share your working conditions. It is with this group that you learn the intricacies of your job, explore the meaning of your work, construct an image of the company, and develop a sense of yourself as a worker.”

(Wenger 1998)

There is a difference that Wenger has defined, and that this is why this work is not fully centered on the concept of communities of practice. “A community of practice is thus different from a community of interest or a geographical community, neither of which implies a shared practice.” (Wenger 1998) The main difference, as this text clarifies, between sub-cultures and communities of practice is brought out by the fact that a sub-culture, within the scope of this study, represents a group that jumps borders defined by specific environments in the workplace and in a sense they represent a much broader universe for possibilities of constitution since geographical, demographical and interests characteristics may be used to define the group’s boundaries and memberships.

Another worthwhile characteristic to note about these communities is that they have a life cycle, they are created, developed and destroyed in a free fashion. The members of these communities identify their potentials and their shared traits or commonalities and extend the bonds between them that will enable the working-learning-sharing relationships they appoint themselves, for they see this as a shared beneficial situation. This, again, is not much unlike sub-cultures.

Perhaps the most relevant concept we need to understand about communities of practice, as well as sub-cultures within this study is, that even thought they do not require a formal and heavy support or infrastructure from management but
they do require a collaborative infrastructure and a communications infrastructure that nurtures their creation and operation given the nature and characteristics that they possess.

2.5 Knowledge Management

“In an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge.” (Nonaka 1991)

Drucker (1993) as cited by Nonaka and Takeuchi (1995) referred to our times as a new form of society, the “knowledge society”. This is basically a society where the basic resource is knowledge itself. Managing, without relying on a common dictionary definition, relates to the action of judiciously procuring and using resources to attain a specific goal. Managing the new resource should then be, given this rationale, of outmost importance for today’s organizations. Under this light knowledge management comes into focus.

The lot of work about knowledge management may produce confusion about it’s definition therefore we’ll start with a simple explanation of the workings of knowledge management from Hanley (1999), “Knowledge management is about people and the processes they use to share information and build knowledge.”

Von Krogh, Ichijo and Nonaka (2000) comment that most companies view knowledge management simply as an over reliance on information systems and that a lot of emphasis, perhaps misplaced, is bestowed on the management part of the concept which possesses strong control connotations.

Knowledge management is above all a vast interdisciplinary effort. Different approaches derive in different results but not all are mutually exclusive, perhaps the field is yet too untraversed to have conflicting opinions. There are plenty of areas in which one could carry out knowledge management activities inside organizations. Some focus on organizational learning (Garvin 1993), others in knowledge creation (Nonaka 1988, Takeuchi & Nonaka 1995), also the questions of knowledge value and knowledge capital and how it influences companies (Edvinson 1997), knowledge enabling (Von Krogh, Ichijo & Nonaka, 2000). The overall agreement is that there are powerful reasons why knowledge should be cared for, managed and administered (Drucker 1988, 1992).

14 “A culture built on sharing”, Informationweek; Manhasset; Apr 26, 1999; Susan S Hanley.
2.5.1 Knowledge and Capital

Drucker (1988) commented well on the fact that information-based organizations in a knowledge-based economy transforms not only the way that modern organizations are devised, but also the economical factors that conform the organization’s dwelling environment in a broader scale. For this the computer transformed medium affects not only the way that investment procedures are carried out but through it the capital transactions as well. The common accounting tools for investment guidance, modified by the immediateness of information technology, shifts decision making from a pure numerical or budgetary decision to a more strategic or policy wise issue.

The way in which we value today’s companies changes also. Capital is about value. We no longer resort to typical evaluations of tangible assets, there are quite a few other reasons for a company to yield revenue and represent value to investors. Such is what Edvinsson (1997) states. He proposes that one manifestation or phenomena that as taken place in the new knowledge economy (i.e. Drucker 1992) is the huge investments in human resources during the last decade. This reflects the attention of modern organizations on the intangible and somehow overrides the traditional accounting stance towards this spending because it was seen before as a negative value. He refers to these intangibles as assets as well as “intellectual capital” or “knowledge capital”.

The market has placed more emphasis on qualitative analysis than on quantitative as was done so before, therefore changing, as stated before, the way we evaluate investment decisions.

In a more simpler (practical) approach to the definition of what constitutes intellectual capital, Edvinsson describes it as a addition of two factors possessed by organizations, one is human capital and structural capital (see Figure 1.2). The first is closely related to the traditional view of human resources but is rather what is contained by those human resources in the form of philosophy, culture, values and mostly what constitutes knowledge and knowledge itself. It is important to note that Edvinsson specifies that this capital is not owned by the organization. The second, structural capital, is somehow a more slippery concept since it involves intangible as well as “tangible” assets such as hardware and software that

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15 Precisely it is seen as spending rather than an investment.
16 This based on research from the Swedish insurance and financial services firm Skandia.
enables the productivity of the company’s employees. In layman’s terms it’s what’s left in the company as its employees go home. Also more recognizable assets such as patents and trademarks belong to this category as well as organizational structure, mostly forgotten as a value generator in organizations.

2.5.2 Knowledge management and culture

According to De Long and Fahey (2000) knowledge management strives to the creation and implementation of tools and practices to enhance organizational performance, along with designing structures and managing cultures for the same purpose. It relies on the use of all three types of knowledge.

They accentuate the need to focus on the three types of knowledge for they believe that most authors tend to focus on one type and disregard the others. Some focus only on structured knowledge, especially those inclined to the information technology solutions to knowledge management. Others have faith in social knowledge only. They also state that to “effectively enhance their organization's capacity to create, share, and use knowledge”, the three types of knowledge should be taken into account.

Their research has led them to establish a link between knowledge and culture in organizations (Sackmann, 1991 & Pentland, 1995). Understanding knowledge without reference to its cultural context may result in erroneous deductions, they state. They have found that behaviors that originate in culture affect the development of knowledge, and that to properly evaluate how knowledge is created and shared, one should understand the influences of culture in knowledge-related behaviors.

De Long and Fahey (2000) also suggest actions to determine the strength of this influence of culture over knowledge that help us understand the relationship further. They urge us to how cultural and sub-cultural priorities, inside organizations, support or deter knowledge creation and flow, and to identify behaviors that can pinpoint knowledge-building activities that are important for organizations.

These authors state that knowledge that is stored in tools like database is only information until it can be interpreted by other organization’s members according to their context. Individuals are reluctant to deposit knowledge in this kind of databases because they feel that they have lost ownership of that knowledge in particular. It can be inferred by these that knowledge property is important to individuals and therefore to organizations as well. When organizations hold that when knowledge creation happens internally the resulting knowledge is property of the organization sends out the message of mistrust to the organization’s members.
The trust that exists in the organization’s elements also influences the flow of knowledge within its boundaries and the degree to which it can be stored in organizational repositories (Long and Fahey, 2000).

“Often, a company's norms will support this individual ownership, encouraging people to refuse to share their knowledge, even as the organization pursues a business strategy whose success requires individuals to share what they know. In essence, cultural norms and practices determine who is expected to control what knowledge, as well as who must share it, and who can hoard it. Knowledge management objectives must be aligned with these norms and practices if they are to be achieved.”

(De long and Fahey, 2000)

With this we can establish an important correlation between aspects of culture that affect knowledge management and the areas we should focus to maximize knowledge creation and flow.

If an organization’s culture has preferences between organizational subcultures, it is also contributing to affect the flow of information among organizational units. This perceived importance leads to the waste of time by employees as they have to defend their unit’s perceptions on some problem or other.

Culture’s elements shape the way that people communicate by determining the rules and practices with which that communication takes place. This is another way of evidencing the power of culture in knowledge creation and transmittal (Long and Fahey, 2000).

“By defining the context for interaction, culture determines how all types of knowledge will be used in a particular situation. It does this primarily by dictating the norms—the rules, expectations, and penalties—that govern social interactions between individuals and groups, and by shaping people’s perceptions of their range of options acceptable to the organization.”

(De Long and Fahey, 2000)

Also the authors suggest that a frank and honest communication relationship should be present in an organizational culture because the lack of those attributes affects negatively the sharing of knowledge. Also they comment that favoring knowledge sharing over knowledge acquisition in the long run benefits the organization since it creates a better setting for knowledge related activities (i.e. teaching). As they sustain “more and more firms have discovered the benefits of having their employees teach others about core aspects of the business” (De Long and Fahey, 2000, based on Tobin, 1998).
De Long and Fahey found four characteristics of cultures that enable them to create and integrate new knowledge from external sources, we will present them in form of a table (see Table 1.1).

Table 2.1 – Characteristics of cultures that help to the creation of knowledge based on external sources – (based on work from De Long and Fahey, 2000)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Details</th>
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<tbody>
<tr>
<td>External knowledge is the starting point of knowledge creation. Norms and practices should encourage the exploitation of knowledge from the external environment.</td>
<td></td>
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<tr>
<td>“Intense debate is encouraged on key strategic issues drawing on extensive internal and external inputs.”</td>
<td></td>
</tr>
<tr>
<td>Participation among organization’s members should be strongly encouraged in the environmental knowledge extraction process. Norms and practices should ensure that this actually happens. The process should rely on individual gathering, information processing and intense discussion to draw conclusions.</td>
<td></td>
</tr>
<tr>
<td>“Organizations find ways to challenge the existing assumptions and beliefs that shaped the firm's earlier successes.”</td>
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</tbody>
</table>

2.5.3 Subcultures and knowledge management

The authors also recommend actions and analysis to subcultures reactions and postures towards knowledge in order to manage knowledge assets more efficiently. They start by suggesting the identification of this groups or subcultures the ways they have to define their knowledge, and what kind of assumptions they base their valuation of knowledge. Also one should define what kinds of knowledge are preferred by the organization’s subcultures.

It can be possible that some views on knowledge in subcultures create “blind spots” to certain kinds of knowledge. Also we should consider cultural aspects when implementing new knowledge creation initiatives, characteristics such as informality can render some projects like knowledge repositories improbable to succeed. In these cases we should analyze the possibility of changing the receiving culture.
Then again, culture in an organization and the relationships between subcultures shape how knowledge is created, legitimated and the way it flows throughout an organization.

“Organizations need to be able not only to adopt or create new knowledge in all forms, but also to legitimate and distribute it to change strategic direction and resource allocations faster than their rivals.”

(De Long and Fahey 2000)

2.5.4 Knowledge Enabling

We have seen the multiple dimensions in which culture affects the knowledge processes, now we will focus on what makes knowledge flourish in organizations. Knowledge enabling is a set of activities that help knowledge creation. (Von Krogh, Ichijo & Nonaka 2000).

Certain actions are carried out by managers in organizations to harness knowledge creation, Von Krogh (et al, 2000) calls these knowledge enablers. In his research and work five practical activities have been underlined as knowledge enablers, for a list of them see table 1.2.

Table 2.2 Knowledge Enablers

<p>| | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>Instill a Knowledge Vision</td>
<td>Manage Conversations</td>
<td>Mobilize Knowledge Activists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Create the Right Context</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Globalize Local Knowledge</td>
</tr>
</tbody>
</table>

Instilling a knowledge vision roughly translates to making it clear to employees and members of organizations what knowledge is about and the power of its benefits. Managing conversations is to give conversations its place among one the most important media for knowledge creation and transfer. Knowledge activists are those who take knowledge as their tool and realizing the extent of its profitability to the company. These activists exist in our organizations and are the ones that could harbor and conduct knowledge processes in a successful way. Creating the right context refers to making an environment where knowledge can be exploited and created. Globalizing local knowledge is the procedure that urges us to disseminate knowledge created in some parts of the organization throughout all of the company for maximum results.
2.6 Information Technologies in a Cultural, Sub-cultural and Communication Context

We will approach the information technology subject from a cultural and knowledge oriented viewpoint. Information and research on information technology by itself is quite extensive and will lead us to lose focus on the important issues relative to our study.

Symon (2000) paraphrases Nohria and Eccles (1992) and expresses a long-time conflict pertaining to communication technologies. It is sometimes perceived that communication technologies cannot convey enough required social information to have effective communication, this is due to the belief that “social cues” cannot be transmitted over some mediums such as email.

To Symon social cues are best described by Lea (1991):

“These features [which] serve to regulate the interaction (e.g. non-verbal cues), provide personal information about communication partners that assist impression formation, and provide an awareness of the wider social context of the interaction (such as status and position cues of the communication partner, and environmental cues as to the expected formality of the interaction).” (Lea, 1991; cited by Symon 2000)

Zuboff (1988) envisions information technology as something more than communication technology and describes it as a powerful tool that not only adds value and meaning to a product but it grows in importance as it becomes the medium on which the activities and processes of organizations are reflected. She also states that it represents by itself a sort of symbolical voice that constitutes a more tangible representation of events, processes and objects so that they become “visible, knowable and shareable in a new way”; this was a hint at the fact that information technology is a part by itself of a category of capital in organizations, intellectual capital (Edvinson & Malone, 1997) as we discussed earlier.17

Still as Symon’s research uncovered that most authors believe that in order for a medium to effectively perform as a social communication medium it must have a ‘social presence’, which is defined as “the ability of a medium to convey awareness of the other person and to support interpersonal relations” (Garton & Wellman, 1995; cited by Symon 2000).

17 See Knowledge Management
Again Symon (2000) basing research work on Nohria and Eccles (1992) social interactions required by the network organization require social understanding and social context. This is crucial since that kind of understanding inside those groups is important since it has been evidenced by Garton & Wellan (1995) (cited by Symon; 2000) that the use of computers in discussions may extend the length of time in which consensus is achieved. Symon argues that with these findings a face-to-face interaction in organizations is needed for the effective construction of the network organization. Although research has also indicated the contrary, that it does not take more time to arrive to decisions based on consensus in computer-mediated groups (George & Jessup, 1997; cited by Symon).

Related to the expected use of communications technologies Symon (2000) relies on Markus (1990) to argument that some technologies such as intranets are not successful unless a substantial amount of individuals, relative in quantity to the organization, are enabled to use such technologies. Individuals in organizations must perceive a social benefit from the use of technologies, in this case, desired social contacts. Therefore the possible positive effects of communications technologies depend on the scale to which they are implemented, or so it can be inferred in Symon’s text.

Nohria and Eccles (1992) according to Symon (2000) argument that electronic media cannot transmit all desired information (as mentioned above) and therefore a noticeable lack of motivation for its use will deter employees from its use. Markus’s (1990) studies conclude that email is used for a variety of purposes, even those uses that have been theorized to be impossible to carry out. Markus instead demonstrates that the election of such a medium was influenced by social norms within an organizational context (Symon 2000). Fulk (1993), cited by Symon, suggest that a shared understanding inside a group is the basis for selection of an appropriate medium of communication.

Given these results and studies we cannot specify exactly what kind of tasks these communications technologies will be used for, it may depend on the existence of culture for their use. “Whether and how the technology is used may be more a matter of the shared understanding of the technology which is built up amongst employees who need to communicate, than what appears to be the most 'suitable' use.” (Symon 2000)

2.6.1 Information Technologies in the New Organizations

Drucker (1988) in an article for the Harvard Business Review stated that advanced data processing wasn’t really needed to create an information-based organization. He pointed out historical examples of successes in operations handled with only pens and ink. It is the analysis and diagnosis of data that sprouts
the information. The information based organization is key to Drucker’s vision of a “Knowledge-Based” business.

2.7 Conclusions

As we have seen the subjects selected for our study are intimately related. There is still work to be done on some broad areas and a general consensus on some point seems to be lacking yet and delaying further work on some other points of interest. But still, a significant amount of research suggests the importance of culture and knowledge to organizations and the way these two concepts are relate to each other in a form that, both, defines and spawns one another and still they are so broad that can be studied as isolated topics.

We also have understood the reasons why knowledge is essential for organizational success and why it is important to manage this knowledge.

Enough arguments have been stated to validate the study of information technology alternatives to cultures and subculture for the maximization of knowledge transmittal and creation. We have enumerated the characteristics of culture that pertain to knowledge and which of those can be managed.

Now we have to determine what of these technologies benefit cultural groups in organization in such a way that knowledge is procured based on direct observation and study of real world cases.
CHAPTER 3
– Field Study Methodology –

3.1 Methodology overview

Having laid out the theoretical context with which we will consider our study, a further review of what actually happens in a real situation is necessary to fully appreciate the application of what we have found in the available literature. We will start by issuing a formal objective statement for the field study, the specification of a proper research instrument, a design of proper analysis conditions along with a detailed profile of the objects related to the study, and furthermore, an outlay of the specific research instrument chosen and designed for this process.

3.2 Objective

For the purpose of shedding real information of what takes place in modern organizations in regard to the use of information technologies in a cultural and sub-cultural context for knowledge creation, a field study research instrument should be developed.

The objective of this instrument should be to discover whether information technologies help in these organizational sub-cultural contexts in the creation and dissemination of knowledge as we have observed in our theoretical research.

3.3 Research instrument selection

In the field of social sciences, we have a choice of two major paths to follow towards successful scientific research, the quantitative or the qualitative approach. Qualitative research presents us with certain advantages over quantitative analysis, and even though this does not mean that one is superior over the other, it does mean that one is more appropriate to fulfill our particular research objectives.

Qualitative analysis lets us understand the meaning of things since it is more flexible in its conception, a researcher can adapt to different ideas and aspects of her particular study as they emerge in the whole process. But the most important reason for choosing a qualitative approach lies in the fact that the main objective of our study relates to the how’s and why’s of a particular issue as opposed to the what’s and how manys focus of a quantitative approach.
One of the strongest tools available to qualitative researchers is the interview. Interviews are devised for each research objective in particular and should be made considering all the factors and characteristics of the environment and subjects involved in the study. We will proceed to define these conditions.

3.4 The interview deployment and process

3.4.1 Analysis conditions

Given the nature of our study, the appropriate environment to really determine the extent to which our theoretical background is accurate, it is only reasonable to place emphasis on the presence of an organizational context in order to guarantee coherent results. To ease the process also an organization of sufficient size should be considered so as to finding a subset of individuals within it would not pose as a difficulty.

3.4.2 Profile of the interviewee

The first and foremost characteristic of the individual to be interviewed should be the capacity for access to information systems. To facilitate the inclusion of this discriminator in our selection process we will require the individuals to have a personal computer for her sole use along with access to an online information system as a base requirement to be liable for the interview process. The use of information systems should compose at least part of his everyday working routine. The interviewee should hold a middle to top management position in the organizations chosen for the study, since having the possibility of horizontal as well as vertical communication, augments the feasibility of the individual to require a certain degree of interaction between different members of his organization in order to carry out most of her functions. In general the interviewee must represent a typical individual of the organization to which it is associated.
3.4.3 Conditions in the field

The use of a handheld mini tape recorder was employed during the interview sessions to facilitate further analysis of the information gathered on the field.

Also the identity of the interviewees and their positions were agreed to be undisclosed from the results to avoid possible problems that could derive from the revelation of the information collected during the interview.

3.4.4 Selected organizations

The organizations selected for this study were a private university system and the corporate offices of an international conglomerate of industries. Both were chosen because the conditions were set that enough subjects were available for the interview process. All subjects interviewed met the criteria previously defined in this chapter.

3.5 Interview design

The main part of an interview is the selection of appropriate questions to pose to the subjects of study. These questions should be carefully selected so as to fulfill two principal requirements, the objective defined for the particular study and a strict relation to the theoretical background from which they are based.

In a study of such a nature as the one we are presenting now, there is a wide range of subjects from which to choose from. All of them are relevant, but to a certain degree. The best process of selection is to decide whether the questions inspired in the literature considered before are enough to accomplish the objective previously set out.

We have developed a framework for classification and evaluation of questions so as to facilitate the selection process. The two major classifications is explained in detail here after.
3.5.1 General class

Questions in this interview plan are classified depending on their importance and direct connection to the specific objective of this study. The questions are first grouped given their subjects and ordered depending on the order of appearance of the topics in the second chapter. Then, there are three basic general classifications (Class A, Class B and Class C) for these topics. The first classification group (Class A) contains subjects that are of relative higher importance to this study in particular. They conform the basis of the study and the questions derived from these subjects help, in a greater sense, to achieve the objective of the interview process. The second classification (Class B) of topics groups the subjects that are closely related to the main but cover only ambient detail of the organizations. The questions derived from these topics can be used to define further information on the organization itself that can help clarify the main issues of this study. The last classification (Class C) contains topics of general interest, and although they are related to the study in general, they provide only circumstantial information on the company under observation.

3.5.2 Specific level

Apart from the general class, we have devised a specific level for each particular topic inside a class. The level grade ranges from one (1) to five (5), where one represents a group of questions inside a topic that convey the highest degree of importance to the interview’s objectives. Questions with the lowest level, therefore, are of an absolute necessity to the interview and should not be avoided, whereas higher levels can be used but are not as relevant.

3.5.3 Question selection guidelines

In a practical sense, this combination of class and level yield a set of questions in an interview where, questions of lower classes but with a low level, can still be used together with higher class lower level questions so as to develop a general device with which a better understanding of the organizations under study can be achieved and therefore detailed and relevant information for this study can be acquired.
Another thing that should be pointed out is that the questions in this table (available for review in the annex section of this study) are in the form of knowledge interrogates and are not designed for direct use with the subjects selected for the interview process. A further more subtle construction of these questions should be carried out to suit the interviewing environment (a list of these questions can also be found in the annex section of this text).

3.5.4 Ordering and testing

The pacing and progression of the questioning should also follow a coherent order. In order to ensure this to be accurate, the questionnaire was tested with a group of masters degree students. Given the conditions that would prevail in the actual field settings these subjects possessed the sort of profile that fit the above mentioned characteristics of the interviewees very closely. The questions then were fine tuned using the feedback of these students as a guide. Comments referring to the clarity as well as the logical sequence of these questions were taken into account in their reformulation and replacement. A group of six (6) students were tested in this fashion. This amount of testing was determined by the receding variations in perceptions from the test subjects towards the questions in the interview and the adherence of the results to desired objectives.

3.5.5 Size of research set

The information collected through the application of the research instrument determines the size of the research set. During such process, a size of twelve (12) was sufficient so as to arrive to definite conclusions within the desired objectives and scope of this study.
CHAPTER 4
– Field Research Results –

Several important aspects of the study were revealed as expected from the use of the research instrument described in the previous chapter. In depth information of the subjects of study was concentrated here so as to further visualize what happens in an every day organizational environment.

4.1 Knowledge management

During interviews, knowledge management appeared to be a topic known to all, but seldom practiced in form. The fact that most interviewees knew of the term in its general sense was an indicator that it held certain importance, yet no to the extent of becoming more important over other aspects of business.

When questioned about the presence of knowledge management efforts in their organization some failed to recognize if any were being taken formally. “Well, they exist but nevertheless I don’t think they have been able to materialize, they haven’t had enough impulse. What happens is that there is not a specific function oriented towards knowledge management.” “Look there is an area who is in charge of that under the human resources department… but the details are not known to me. Probably the program is just being developed.”

In other cases knowledge management was seen as an instrumentation issue and was therefore related solely as tools and information technologies. “As a matter of fact we have been participating a bit from the information management side and we have been creating data bases and sources and we have analyzed and we already have for the legal department that they have a digital library that is being constructed from the digitalization of documents.”

In some other cases knowledge management efforts found its source in individuals not directly related or identified as knowledge management sources, but rather as clients. In this case the client of such knowledge management tools identified some crude form of market intelligence and operations management tools related to knowledge management and sought for support within the organization but was deterred by lack of management response. “The first part that I wanted to do within knowledge management was a place where the function of these people that I had identified as my information sources were remunerated or evaluated for their performance depending on the amount of times that they offered information and to do it trough a system in which I wouldn’t have to be soliciting information but that we already do it in system with reports user id and passwords and that it would create a data base in itself.” Although this is not strictly knowledge
management, it does pertain to the market intelligence area of it, and was so recognized by the employee. “There were situations with the entrance of my new boss and he had an idea very different, or maybe what I was saying wasn’t exactly knowledge management.”

The more formal approach to knowledge management was found in the area of human resources where effort towards human capital have been made so as to retain and develop individuals and also support the knowledge transfer between business units in the form of best practices. “Two and a half years ago or three, we started with the concept of intellectual capital management so as to be closer to de talent, of knowing more of the talent and above all of not seeing the executives of [one business unit] as property of that [specific business unit] and the ones form [other business unit] as property of that [particular business unit]. The two first levels [of management] should be [corporate] property and talent interchange should be done in a way that is most convenient for the group. That was the source of the necessity of an area to manage that issue and a system was created that is called ACIIC (Intellectual Capital Management of Corporative Interest). In this system we have all the information of our executives, especially of those hundred and fifty (150) of the first two levels of pure directive levels but at the same time we have that of all the managers and directors in a manner that from here we could at a particular moment see who could get near to one of the business units and that it could be said that a need for a certain profile or talent could be met without relying on external sources.”

This effort has been successful since it has created a change within the management and open and free interchange of talent has been made possible. Also this system allows the organization to follow the development of its human capital for with it one can learn the current training each particular executive has gone trough. Also care to the development of competencies has been made possible trough the use of this system, although it is recognized that particular development should fall into each individual’s responsibility as was put by one employee: “… development is a responsibility of each and every one of us and the only thing we can do for you is to offer you tools and support so that you can move forward.”

Still it is it has been clear that there is still some work in the future and that the available tools, if any, haven’t been used to its full potential. “The information technology areas have done some trough [knowledge management efforts] portals, here specifically in the IT department we have some tools that we haven’t profited enough from, and in some other divisions as well. The efforts are isolated something at the Group level has not taken place.”

One case was mentioned that made quite an impression in the company and made it consider a closer inspection on knowledge management issues was one that was widely known to the employees and that prompted immediate action by the organization. The incident was related to intellectual capital and the problems
that arose by the lack of discipline in this particular area. “… the packing division, is within the company the division that generates the most patents, and right now in the past this area was mostly unattended, there were many innovations that were not patented and later they realized that they came in acquisitions of new machinery to replace old equipment, already certain improvements arrived that were really things that were created here and that the suppliers and manufacturers took note of, patented and then they in turn charged you for it. Right now, there is a consultant [name withheld] that has weekly I don’t know or biweekly with the people from packing to the effect of inculcate the importance of patents…” “Now we have a very big problem with information leaks with our suppliers and with our clients. If someone made an adjustment to a machine well who ends up capitalizing that geniality is not us but the supplier of the machine that comes in a year or two with that and sells it to us.” People from the legal department are involved in these actions to ensure that they have full protection form the law.

In respect to opinion and perceived importance of knowledge management, all of those consulted responded affirmatively and considered it important to an organization. “I think that it is very much important to be able to plan knowledge of different parts of organization and I believe that in the company they have tried to do something like that.” Also different aspects of knowledge management issues are valued over others. “Yes of course. I believe that what’s most important of a company is intellectual capital.”

This focus on human capital is mostly due to the fact that most efforts are being made by the human resources department, therefore tilting perception on knowledge management towards its human components. “...very interesting, and above all necessary in a sense that if you already have a heading as a company to where you want to go and what you want to achieve, you need to have the adequate talent.”, “... these types of efforts I believe that they make you focus on what you really need from people or what type of people you need to arrive to the goals you have set.” Also, “ I feel that one of the principal assets are not fixed assets or nothing, actually, the experience and education of its people, not only high management executives. There should be a training effort from the workers up to the general director and the way in which the leak of brains can be better controlled so as to avoid that knowledge to leave to the competition; that’s why we have to cultivate people properly so that the people [can] stay.”

To others it was a technological issue rather than a procedural or functional matter. “I think that technology can revolutionize as much knowledge transmission as it has revolutionized information processing…”

Yet at least one of the individuals didn’t understand the concept or didn’t know exactly to what it relates to: “I don’t know of it, so therefore I cannot give you an opinion whether it is good or bad. I would like to know what it is all about and then issue my conjectures.”
When asked if there was a formal policy in the organization related to knowledge sharing none of them could identify one that strictly stated so. “Policies exist inside the company but I don’t know specifically in knowledge management areas.” “Not that I know of, not as a policy for knowledge sharing. There are confidentiality policies and internal use but not regarding sharing it specifically; I don’t remember having seen it.”

Then again the focus on human capital is found in their focus on vocal or partnering development. “No it’s not a policy, what there is, is that one of the values of the company is to develop people, it’s not like a policy its one of the values. For example one of my objectives is to develop one of the persons that is with me so that it can be promoted.” In another comment this was reflected also: “I will give you an example: Not only do they expect that you continue to develop yourself, but they do not question at all if you want to develop in your area.”

They do however identify an event that is mostly related to knowledge transfer somehow related to a loosely drawn policy, even though it is more of a medium for knowledge transfer, apart from the conventional means that they have stated, like books, manuals and meetings. “Not as a formal policy. We always have an annual event that we name it the Annual Operations Congress, that takes place between September and October where we unite the most important five hundred group managers and directors in the operative areas, then [people] from sales, marketing, manufacturing and all areas are there. The objective of this congress is to lock them up two days in a convention centre where they present their successful practices with the objective of sharing experiences.”

4.1.1 Knowledge management summary

As we mentioned before, knowledge management efforts are loosely coordinated in general. As expected from the history that knowledge management has, as we commented in chapter two, the interdisciplinary nature of knowledge management arisen from the wide variety of areas involved and affected may cause what we saw in the field, that those who acknowledge the benefits of managing knowledge are the first to embrace it and are self appointed knowledge activists as described by Von Krogh, Ichijo and Nonaka (2000). What we saw in the answers provided by the interviewees is that departments that have more palpable relationships with the field of knowledge management, such as human resources and information technologies, find it easier to undergo or participate in projects involving knowledge management as the main driver. Yet this does not necessarily mean that those projects are in full scope under knowledge management principles or to say that those who do not participate do not acknowledge the importance of knowledge to an organization. On the contrary, the results of the field research
showed us that regardless of the degree of involvement in knowledge management efforts, almost the totality of employees have a high opinion of knowledge as a valuable business resource.

Still, somehow, knowledge has not yet become a part of typical working procedures and the main focus, as it should be, has remained in providing all that is necessary to accomplish principal business functions. There is room yet to accommodate for activities that consider knowledge management issues that far from handicapping formal business functions could enhance employee’s performance and in turn the company’s as well.

We also found that problems have arisen in the past from failure to consider knowledge capital by not implementing knowledge management procedures or at least instil the knowledge vision in workers, letting thus valuable opportunities for the company’s development. Corrective measures have been taken and some preemptive as well.

4.2 Information systems and their use

People in the corporate offices have a wide array of information systems available to them. In most cases these systems provide the means for them to carry out their every day work. Some are simple, “at the corporate level more or less we have tried that each one [individual] has an application sometimes very simple ones...”, some are much more sophisticated : “… there are more complex ones for the specific functions.” Mostly they all share a common base of desktop computer office tools and their own share of decision support systems depending on each executive or employee’s needs. Examples of these are MetaStock and the Bloomberg service.

Something interesting to note is that in relation to the amount of systems or the type of systems and tools that can be made available to them, there is no real limit. “To us there is no budgeting restrictions, if I need something it’s a matter of asking for it and it is received.”

E-mail is the most available tool for communication provided by the organization.

“Electronic mail, everybody is on a network and it’s a very effective way of communicating.”

It is interesting to note here that there is a cultural connotation to the use of technological tools. Several of the interviewees made this sort of observation. “… e-mail is a tool that we use a lot to share information, little by little, informally it has
become, well, part of culture.” There is also a widespread use of electronic portals, but mainly, these replace conventional few-to-many information services and are seldom regarded as genuine communication tools. “And the portal is very much still informational, for announcements and things of general interest, we still don’t use it form information interchange.” Email is used “every day, very much. It has become a very strong custom inside the company.”

Electronic mail is used for both, personal and work related activities, although some felt strongly about the fact that it should be mostly used for functional reasons. “It is used [for personal reasons]. We try for it to not be used for personal ends. Some web pages are blocked at the system level. Access to the Internet is not open to everybody; there is a policy for the use of electronic mail…”

Regardless, people related to the IT department like to define information technologies and communication systems as tools for business but that they should trust the employees the same way they trust them with other technologies such as a fax or a telephone, and that informal systems could also be encouraged.

“Well I myself have the [Microsoft] Messenger installed, there are some that use ICQ, and well in the corporate IT department, we like to promote this type of tools, because there is a policy where it restricts the employees to the proper use of information technologies. For example there is an IT policy that will shortly be published that is already authorized, it refers to the policy of ethics and good business practices that we have internally related to confidentiality so therefore the electronic medium converts into another medium where there is no restriction for its use like faxes or telephones.” “Like any resource, we assume that the employees will make good use of it. At the rate that this tool is available I believe that it will make work more productive.”

Still there are and will be restrictions to full use of technologies such as these: “…we have identified users that are allowed to have them. Normally it is required that the boss is in the know. But after they’re allowed to have it, there is no restriction.”

“There are people that don’t want the employees to have access to the Internet. The general idea is that you will have [access to] Internet because your work requires it.”

With this in mind and in reference to whether the company encourages employee communication most believed that it was rather through building a proper and relaxed environment that they realized the value that the company places on employee communication.
“Encourages in a way that, or well, not in written form I’m not so sure but the environment that exists in the company is of much communication and very open, and you have all the tools, all the precise information and all the openness enough for that it [(communication)] encourages in itself.”

Sometimes horizontal as well as vertical communication is encouraged.

“I believe so. Even on different high management meetings the very same general director has exhorted people to even send him, if they have any doubts or questions about how we are going and what are our future challenges of the company…”

“In general, there is a very good communication, even at different levels, directors, employees. The company, again, is very clear in the objectives that it wants to achieve and the compromise that it asks of employees. It is not common to see the case of an area of the corporation who is jealous to share information.

As we have mentioned there are some informal tools that are widely used inside organizations that ultimately help employees perform their jobs as it is expected of them and with some benefits.

“With the case of informal tools I have obtained important information. On these tools nice discussion groups are made. Because you have your friends and people who is related that not necessarily is from the company and suddenly you say: --hey I need something, who knows about this or the other? --, and you get it.”

When the subjects were asked the basis for deciding which approach was preferred for communicating amongst the people in their immediate range, we found that mostly functionality and circumstance was the strongest factors. “…the size of what I want to communicate. There are times when I want to share extensive documents or presentations… Therefore the best way is to send it trough email. And there is certain information which is confidential or very delicate whose character is still speculative that I don’t want to have in writing, so that generally, with my boss or subordinates I do it verbally.” Speed and depth was also mentioned. “I think that a lot of factors, it is the depth of the information and the speed with which you need it; the sense of urgency, and the impact that the information may have…” Sometimes “it does not work that we are telephoning each other all the time and we need to sit down and carry out planning together and work on that.”

Some believe that person to person communication is more important or helpful because “there are two floors and that very much eases communication.” Or because “it is not [occurring] trough voice but rather much of it is non verbal language and I believe that nearness and understanding is much better when you do it up front. Of course we use a lot of electronic and telephonic interchange.”
Confidentiality seems to be a key factor, since most don’t trust the security of the electronic medium. “Apart from that any affair from the area that I run regards things of a very high confidentiality. I do not trust much e-mail when you have to send or transmit confidential information. I prefer to hand it out personally.

To others it is a simple question of degree of complexity. “If it is something simple and explicable it can be sent by [e-] mail. If it is something that requires a bit of explaining, by [e-] mail and by telephone. If it is something very complex, [then I prefer to address it] personally.”

Nevertheless the importance of the electronic medium is clear to all, “the day that the network is down you die... we depend too much on electronic mail, it is an impressive dependency. Now you do everything via electronic mail.”

Event though there is a much perceived importance of personal face to face communication no special accommodations for informal contact are commonly found or used.

As to whether the use of informal systems helps in every day work, most of those interviewed felt that it was so, and it was widely regarded as helpful by their co-workers also.

“Yes definitely. Yes, even now you are familiarizing, everything now you want to do it electronically to facilitate time... And culture, on the other side, of answering [one’s] questions is also happening now.” Before, you did have a hard time. When you sent a question you doubted when it would have been answered, and now it is a given.” “Yes it does help me solve problems.” “It helps me a lot. I have been able to maintain relations with my former clients…”

In respect to information systems and the way they accentuate or limit the capacity of developing important interpersonal relations the overall feelings and beliefs of the interviewees were positive. When asked of these particular effects answers along the lines of: “I believe that on the contrary it has helped me to socialize more”, were common throughout the research period. In fact on some cases these systems were more of a necessity than a mere complement. One of the directors commented: “I have people that work with me that even... that personally don’t develop as well as when they’re using electronic tools. I mean, there are people that you give them a chat [program or room] and they transform. There are times that a person imposes physically and maybe your style that could be submissive makes it unable for you to express your ideas suitably. An electronic tool removes that barrier.”

One of the benefits to socializing through electronic media, as was put by one of the interviewees, was that it can be felt as a less intrusive means to maintain relationships. “Sometimes I am much occupied and my colleagues are as well, so I
feel that it helps coexistence to give people the least possible bother therefore I feel that it is a way to be in contact without being invasive.”

There was very little controversy regarding these phenomena, still, there was at least one individual who felt that “it makes the relationship colder”. But still thought that “very effective communication can be achieved” and that “it is possible to simply know very well a person and to know how the other person is.”

An important medium for tacit to tacit knowledge transfer, as discussed in chapter two, is the discussion. This was, too a question that the research was to answer. How was the electronic medium perceived as a tool that enabled profitable discussions in the workplace? Advantages and disadvantages were commented. Some of these were more related to the inherent properties of information systems but subjective observations were also noted.

One of the most positive results of undergoing an electronic discussion was perceived to be the fact that in electronic discussions “you leave a record of what has been said”. Also the “quickness and ease with which ideas can be distributed” also was a common positive trait. “Thinking really well in what you are going to write” helped some of the subjects, and that prevents to create a “reaction” that would otherwise make “you not to arrive to an agreement.” Having many people at the same time and from many places was another positive perception.

The main disadvantage perceived was the lack of parallel communication media, or the “body language” as one of the interviewees put it, above all the fact that “lot of people want to play psychologist and then the tone of voice and the speed with which you answer to questions”, somehow makes them think that they can “read many things” for “we read as much from what is said as form what is not said.”

“A disadvantage is a question of time” but even that was not perceived as such by all since at least one considered it to make it easy for people to “in a matter of seconds to be reading what you said, and answering afterwards.”

4.2.1 Information systems summary

Conditions in the field for information systems implementation and their use remain mostly unchanged. Systems support transactional services, and in the corporate setting, decisions made by executives. Communication technologies are regarded depending much on the individual’s feelings towards technology and his or her personality. The same happens on the trust given to them on relationship building issues. While some consider information systems to actually heighten the possibilities of successful relationship building, others feel that the amount of
alternate communications that occur during face to face interaction cannot be transmitted accurately enough by existing technologies in the workplace, along with the uncertainty in the security provided by the same systems. These considerations were discussed in the theoretical reference in previous chapters. The decisions then behind the chosen medium for communication lie in the practicality perceived by the user. Basically, the possibilities for learning through these systems rely on the perceptions by each user and not in the actual systems themselves.

4.3 Teams

Teams are mostly organized, planned and directed on a per-project basis, “the driver or what determines teams is the objective”. The research results showed that however, always teams are conducted by the highest hierarchy level involved. Also there is no apparent procedure for carrying out the teams’ activities, or a specific electronic tool to aid in its progress, although e-mail is always used as means to deliver and exchange documents and data for team operation.

“Many times they are multidisciplinary depending on what project it is.” Providers of internal services are identified by the team and are approached to participate in the projects. Most of these providers come from different departments within the company.

When interviewed, individuals explained loosely how they participate in teams. In all cases there was no procedure for organizing work, except in the IT departments where most development work integrates small numbers of people from the same department; developers, designers and team leaders are always found participating in such efforts, and they follow the structured analysis approach to software development which consists of three predefined phases, an analysis phase, a design phase and an implementation phase. Throughout these stages the team constantly involves the end users in team decisions and updates them on progress, they are considered part of the team as well.

4.3.1 Teams summary

The importance of teams in this study lies in the way that they relate to actual sub-cultures present in the workplace and the way that people are used to interact. The main difference found was that teams are very formal in nature even though there is no formal and typical procedure to the way that they function and or tools that specifically address the process of team work and its functions. Team work is part of every day activities in the corporate workplace, and of a multidisciplinary
nature. Team work is expected to carry out business functions properly since no particular department is self-sufficient in that respect.

4.4 Sub-cultures

An interesting part of the research was the culture and sub-culture oriented questioning. During the research interviews all of those interviewed considered their company’s culture to be somewhat predictable and standard throughout; nevertheless, although with some difficulty at first, most were able to determine some characteristic or other from people working in their same departments that stood out from those attributed to all members of the company.

In an assured manner, as stated above, perception of the company’s culture was consistent: “it’s a lot about camaraderie. That helps you work comfortably since everybody works under the same culture, under the same interests, of honesty.” To others this general culture was “harder to articulate”. Compared to other companies, their particular company’s culture was hard to notice superficially, and rather amazingly, described their culture by its components, values, norms, etc. These perceived values were “austerity and the value of camaraderie”. As an example of this camaraderie one interviewee mentioned a practice valued by most employees, greeting people around by hand, on elevators and hallways, and introducing themselves if people are not known. This made employees feel “part of the team” and it is perceived as a value that pays up during team work or meetings because “there is that cordiality to work”. And whether or not they liked these practices “it is hard not to play that game, you end up greeting the person who extends his hand on the elevator.”

The way that individuals distinguished themselves apart from others in the company was mainly through the identification of values and practices particular to their practicing professions. People in the finance areas considered themselves “oriented towards the quantitative aspects” and seemed to “regard numbers as truths and facts”. In the IT department a reliance on technology for productivity and the fact that it actually helps them socialize is the “way we tend to be like.” Some are considered themselves to be the “experts” and take pride in their “perceived reliability” as they are “consulted for everything.” Others considered people in their department as “analytical”.

Identification between members of departments came from the sharing of certain cultural and personality traits again derived from the profession and job activities they shared. “Studious sort of nerds, serious. I have many very serious guys and girls. And a bit is, well, I believe that it is not by chance to see the profiles of people well, if you have a programmer that is very communicative then he will never develop right?”
The groups with which people identify are varied and for different reasons. Mostly defined by the department they work with and by the amount of contact due to functional reasons, and yet other reasons such as similar experiences, degree of studies and the time they have been working for the same company are also factors that decide to which of those groups individuals relate to. “You have the group from the department with which you interact and you have the very informal group of your friends.”

As for reasons to why they relate so well with people within they’re own departments team work and camaraderie were cited. “The same teamwork to be able to foment it camaraderie is very much required and so amongst people, apart from being work companions we have some friendship and we know each other a lot.” “We are friends and we comment on personal matters and we sometimes go drink a beer somewhere or we have reunions outside.” “A certain group that has antiquity, and sometimes we go to lunch certain people that have more years inside the company or things like that.”

Sometimes people feel that it’s easier to relate to “people with masters degrees and foreign studies”. The people interviewed, most of them had at least a postgraduate degree of some kind and sometimes even two, with one of them having been studied abroad in the US or Europe. “In our case, we are a team of Mexicans that have worked or and lived abroad, the majority in the United States. I have seen it in United States and Europe. So we have the knowledge of a Mexican that has worked in a foreign country that differs from the knowledge of a foreigner who has lived in México or a foreigner that has never lived in México, so there is a national component. And you could divide it in a few gores, like an orange, or subgroups. I identify with that one, the Mexicans that worked and lived abroad and that returned to México.”

In some departments gender is also a characteristic that ties people, on a particular case all of the members were female and therefore they felt they had a special bond.

Ages are also a factor and information systems help them get together. “There is a series of persons that are young, between 34 and 22 years old, that we get together every month or two, without any clear periodicity. At the time you are going to make a party it is super easy to organize it trough e-mail, you tell everybody that we are going to meet on some day at some hour and what do they want to bring to it, and everybody answers if they can do it, and you define someone to designate what is each one going to bring.”
Some don’t like to be too attached, even though they do accept to have relationships they prefer to guard their distance, they don’t like to “create compromise that in the end could affect your judgment inside a work process.”

Regarding the usefulness of these relationships, some felt that it indeed helped them carry out their jobs easily and that business matters are also discussed in informal reunions and situations. “They have helped me do my job. Above all from the areas in which they are.” “People working in those departments are from this group [(informal group)], it doesn’t mean that because they are my friends they are going to provide the service, they give the service to whomever needs it, put just the same if I go and tell them to give it to me because I need it expedite, and they do it.” “If I have questions or doubts I ask them, and we spend time at our recreational parties discussing about what we are doing.”

### 4.4.1 Sub-cultures summary

As we can see, depending on the characteristics of the group, the degree to which these relationships affect each other as well as the places or things they like to do as a group is defined by their own standards, standards which are difficult to pin point to any particular personality characteristics of the members of the group. Members of certain groups prefer online discussions, as opposed to other groups that prefer social contact in the form of parties and get-togethers, and yet some others prefer the more distant and semi formal relationships of business lunches. To all, information technologies pose a benefit, whether to keep in touch, to facilitate their reunions or to simply enable any communication at all.

Also it is important to mention that characteristics that define their groups change group to group, and these are not imposed in any way by the organization, it is but a matter of chance and the possession of particular characteristics that are shared. The existence of an overall organizational culture is not to be ignored but nevertheless there is an obvious presence of particular cultural elements that evidence the fact that sub-cultures are indeed found in organizational contexts.

### 4.5 New knowledge, innovation and learning

In the case of new employee introduction to the workplace there are various formal as well as informal procedures. “The formal process has to do with legal aspects where you sign a contract and where you are explained the benefits and responsibilities and what prohibitions you have, so much of this formal process is conducted by human resources. There is a second formal process that has to do with integration with the area, it is to say, to know which your potential clients are
and which are your suppliers, which are your immediate companions.” “Then the people from the information technology department come to train him/her in the area and use of technology and the use of electronic mail and the Internet.”

“There is an informal process that has to do with getting to know your coworkers around you.” “What you do is that you go and introduce him and you say that he or she is going to be working with us.” “This is not in every department, they are not show to every floor, it is more like showing him/her to whom interaction is going to be with and to their neighbors.” “After that some time is given for them to familiarize with the company and a series of documents describing the company are given to them… and this period could be from two weeks to one month to the effect that he feels more or less the [adapted to] the environment.” “Very rapidly friends are made, you don’t struggle they are made fast.”

Some of these processes go unbeknownst to a few of the employees. “There is no standard procedure that I know of. Well there are some introductory courses to which I never went.”

Learning by observation or imitating behaviours from other people in the company was noted as something that happened all the time, “from simple things such as how to use the electronic keys we have, until I saw the other friend who placed it close to the door” to the “things you learn at meetings, like the manager who is stuck with something to the engineer who is worried about the budget.”

"The interesting thing is how much that there is a conscious imitation and how much is there an unconscious imitation, to what measure? Sometimes there is few and sometimes there is many.”

One of the interviewees confessed that watching others helped him decide on social and personal issues such as what kind of car to buy. “Inside the culture of [this company] the type of automobiles are below in the managers’ and directors’ parking lot are different to those in [other companies] that I know. So then my decision of what automobile to buy of course that is influenced by the type of automobiles that are down there because you don’t want to go out much to the upper mark or to go out to much downwards, at least at the personal level. Or if I had done that I would have been very conscious of the consequences that this could have, in terms of attention [I would receive], etc… There is a question of imitation, I imitated more or less the high pert of the automobiles down there.”

Constant learning by observation was felt to be important also. “I feel that every day you learn from people, from the boy that takes care of the car downstairs to the general director.” “For example when I just started working here I was in the other floor and I was next to the insurance people. The person next to me was developing a system for the recording of wrecks and all that, then I learned that he was doing that, I told him that interested me and that I wanted to build a system to
do certain things. I asked him to tell me how it had been, he told me to be very clear the design and what things it had to do, etc.”

Things learned from observing bosses that were not actually taught were highly valued. “I've learned how some people handle persons or order certain affairs, it helps you so that you could do it similarly. For example my boss lets some things done by his subordinates to be presented by themselves and that motivates them, therefore I don the same with my people, it is not something he explained to me, it is not through explanation, but you see that it can work and you apply it as you are able to.”

People that are identified as experienced are also perceived as valuable sources for learning. “Above all people with experience are people from whom you learn much, people that has time here in the organization. And I remember precisely mi ex boss that already had some time here, I remember this one time he told me that there are areas that should be a gray horizon for stars to shine. That’s when I realized that this area had to be a gray horizon so that the stars can shine because we are a hundred per cent service area, and we are no here to shine but to make others shine. A comment that maybe wasn’t related but it has made sense to me. And I try to reinforce that with my coworkers.” So as we can see here, socializing with people in the work place has led to a change of practice or determining a working philosophy.

Still, learning like this was not limited to bosses. “I cannot name many things specifically but a lot with bosses, coworkers and users. We have learned processes that we didn’t know of, processes that exist in the corporation that we haven’t seen in other companies before working here.”

Whether electronic tools could help their users learn in this fashion was not clear to those interviewed.

Regarding knowledge sharing and the question of what knowledge people would share amongst their coworkers and what knowledge they wouldn’t, almost unanimously people interviewed perceived the practice of such distinctions unfair and idiotic. Very strong feelings towards information and knowledge hoarding were expressed in their answers. “I do not play that game. I believe that that is a stupid game that at the end of the day does not lead you anywhere.” “The notion of not sharing knowledge as means to climb or progress appears to me as on of the most stupid ideas a human being could have.” “I believe that it is the dumbest dumbness that exists in the world. If I know something and you join it with what the guy on the side knows and what the other knows, well then we are going to create something much better.”

Still some cases were known where information and knowledge was withheld and that it was believed that some people within the company could follow such practices for their own benefit. “There are people that tell you that they are not
going to teach you, it has happened to me.” “He told me that he was not going to
tell me how to do things.” “And yes there is a lot of people like that.”

Confidential information was always mentioned as one of the things that
shouldn’t be shared. “I can’t think of something that shouldn’t be shared but for
confidential information that I should keep in my head or in a document under lock
and key.” Among the things mentioned that could be shared were: “methodology
on how to do things in a structured manner, of how to do an analysis of pros and
cons”, “advice if someone needs it” and basically “the good things are what you try
to share”.

There were to comments that are worth mentioning and one is that one person
thought that “there are certain things that make you unique and that can not be
shared, like dealing with people, or how to gain peoples respect, or dealing with
authorities, that can not be shared or inherit, that is [characteristics] of each one
[individual].” And also “things that are really personal. If it is related with work but
that at a certain time it does not affect anyone if not is not told but rather not telling
it does help me in my development, well then it may be something that I would
keep and give it out until those moments, only if it doesn’t affect [anyone]. One
thing that I do believe is that if there is something that you have to raise your hand
about and that for only personal reasons you do not tell about and that it would
affect other in the company, definitely I wouldn’t stop communicating it.”

Ideas developed by employees within the organization are property of the
company but there is certain recognition from the company towards those who are
innovative and also there is a yearly innovation award given to someone who has
proven trough work that has made efforts towards a reliance on innovation. “We
also coordinate the award for innovation and creativity. This year we are going for
implementation of innovation and communication processes, and precisely not so
much awarding some geniality that someone occurred because we realized that
while we do not create a creative and communicative culture then the projects that
they would create for us will be very sporadic. So then we have to start creating
culture. And the new profile that we want to include in the award is teaching people
to communicate ideas.”

4.5.1 New knowledge and learning summary

Learning occurs in the workplace, sometimes without incentives, and
sometimes motivated by work activities. The important key factor here is that tacit
to tacit transfer as described by Nonaka and Takeuchi (1995) does occur in the
organizational sub-culture setting. Real knowledge useful for employees was
transmitted via observation and the immediacy of coworkers provided aid for this to
happen.
4.6 Field research results conclusions

The various issues related to knowledge transfer in a sub-cultural context have been studied and observed as a result of applying the research instrument. Delving into the relationships and the culture actually possessed by individuals in organizations was not done through direct questioning, and rather by indirect questioning. Although some questions explored directly this aspect, it was found that individuals found it difficult sometimes to identify their social status within the organization and it is not something that they can easily explain. And yet adding the information technology issues as well as the knowledge management implications made it somehow harder. Yet positive results from research were found in the end and the correct correlation of the information provided by those individuals, keeping in mind this study’s contextual reference, helped us in adequately piecing together a coherent report of what happens in the workplace that relates to our study.
CHAPTER 5
– Information Technology and Sub-cultures Towards Maximizing Knowledge Creation and Flow –

As we have seen in the previous chapter, information technology is sometimes used beyond its intended first application and onwards to a wide variety of uses that could provide a basis for knowledge transference and creation in the form of socialization. In this chapter we will expand on this idea and propose how preordaining cultural and technological elements, organizations could prepare the conditions necessary for successful knowledge creation and transfer amongst its members.

5.1 Objectives and Characteristics

As any formal process its objectives should be outlined prior to its execution. As well, the characteristics of the process itself should also be made clear to prevent misguided efforts and more importantly have a mean to manage and control the performance of such a project. In conditions as elusive as the ones present in the endeavor of harnessing the knowledge generated in a subculture, transparency in both these aspects of the strategy could define the difference between success and failure.

5.1.1 Laying out objectives

The objective of a project such as the one we suggest in our study is to simply maximize both knowledge creation and knowledge transfer, and here we certainly have to acknowledge two basic things: (1) that knowledge is by itself a valuable asset and that possessing it, creating it and harnessing it could lead to positive results for the organization; and (2) that knowledge creation and transference occurs naturally inside groups inside our organizations. These two facts are not only pointed out in the theoretical background provided in chapter two18, but are also proven to happen in the workplace as we have seen in the previous chapter19.

18 See Knowledge and organizations in 2.2.3; See Knowledge creation in an organizational context in 2.4.4
19 See Knowledge management in 4.; See New knowledge, innovation and learning in 4.5
Of course here it is necessary to point out that what kind of knowledge or precisely which knowledge will be preferred as an objective in certain situations does not pertain to this particular procedure. Knowledge by itself is the benefit. Also, if one decides that identifying specific knowledge as the ultimate target for this project should be an imperative then it should however be defined in a broader sense and the reasons for this will be later explained. Still, drawing an objective should be considered and for this an enumeration of what knowledge is currently possessed should previously be established, for it is from this previous knowledge that the differential of new knowledge generated by these efforts should be distinguished from.

This may come somewhat as a hard bargain to managers, since we are accustomed to having clearly defined objectives in all projects we undergo, or at least measurable progresses that can be easily traced back to specific actions taken in the development of such projects. The objectives in this sort of processes resemble visions in that there is no clear identification of a path to follow but more of a state that can be achieved in the future. Information technology in this case represents a strategy that can aid us in fulfilling such a vision.

5.1.2 Characteristics of knowledge creating sub-cultures

As stated before, noting the characteristics of the process would further benefit us as it facilitates understanding the nature of the sub-cultural knowledge creation process.

One of the main characteristics of this process is that it has no clearly defined point of departure or final state. As we have seen in our field research sub-cultural knowledge creation and transfer occurs whether we acknowledge its existence or not, it occurs whenever people working together are placed in proximity with each other, therefore we should not confine the scope of our efforts to any particular timeframe.

On the other hand, there is another element that like the previous one is not under our control, and this is the definition of the key participants in such process. As we also have seen in our theoretical and in our field research, reasons for formulating an akin set of values, norms and practices which define the sub-cultures that exist in an organization are determined by a loose group of cohesive factors that are identified and related to by the very members that conform these groups. In other words being a member of a certain sub-culture is not something that could be manipulated by the organization and rather a by product of the individuals within it as they relate to each other, through the sharing of traits such as age, academic background, profession, etc. However we could define, in a
broad fashion, that all members of our organization are legible to take part in processes such as these.

The third characteristic is the one that limits us in a way that we can not define the specific results of the process. Similarly to the previous characteristic, we are unable to define when will knowledge will be created or transferred and what knowledge will be created. Since social interaction between the members of a subculture is determined by its members, along with degrees of involvement and activities for relationship enhancement, then when the actual socializing takes place is also not within the control of the organization. Likewise, the way in which socializing takes place and amongst which members of the organization also makes it hard to identify which type of knowledge will be created; it could be related to work processes or to a specific project management, again, this is something beyond the power of the organization to control. This is why, as we mentioned before, we can not define a specific knowledge objective for these processes, for the intervention of the organization in defining aspects such as these would alter the nature and mechanisms of subcultures and render them within the realms of teams that, even though they are also good sources of organizational knowledge, will leave all the knowledge generated by sub-cultures still untapped by these efforts.

The fourth and perhaps most important and harder to achieve characteristic of this process is that a very real and positive vision of knowledge sharing in the organization should be present in order for true knowledge transfer and creation to take place. Our field research showed us that in the workplace a disposition of knowledge sharing is deemed important and positive by employees, yet some of them hold certain reserves and for these we can never be sure of to which degree knowledge transference will be embraced by those who posses it. As the previously mentioned characteristics this one is hard to control, but it can be somehow influenced through organizational culture change efforts inside companies. Companies have been conducting cultural reforms in their organizations for quite a while, and the development of competencies in their human capital through training is common practice. It is through influencing the underlying general organizational culture that managers can determine the basic traits of all subcultures in their organizations and providing a positive, relationship healthy environment for work could help in pushing the idea that knowledge sharing profits all who practice it. Awards and high management recognition of such traits also encourages this disposition in employees.

A brief analysis of the characteristics stated above could show us that the basic conditions for knowledge creation in sub-cultural contexts is relatively easy, and this comes from the fact that it happens even though we can not control it. But this does not necessarily mean that we can not stop it from happening. Certainly by muffling the communications between our employees and preventing them from creating meaningful relationship amongst them we can stop this process from taking place, but this also means that in doing so we will be straining the
company’s ability to function appropriately and therefore damaging the profitability of the organization as a whole. What we could actually do is acknowledge the potential of knowledge created in this fashion and believe that positive results derive from it can wash of in the organization itself.

5.2 Information technologies in the sub-cultural knowledge creating process

As we have seen in the results our field research information technologies, and in particular electronic communication technologies, are used both for work related activities and for personal informal reasons. It is this liberty with which individuals adopt these new technologies for their own benefits that could indirectly help the organization to further achieve its goals.

5.2.1 How IT helps

Information technologies help by providing means of communication between members of the organization. Communication as we have seen in the theoretical background is a key feature that favours the emergence of culture. With it, we know that the characteristics shared by those integrating a sub-culture can be distinguished by future and actual members and the important relationships needed for successful socialization can be cultivated. Shortening distances, providing unobtrusive contact, facilitating group discussions are ways in which information technologies provide benefits that would not be otherwise available through conventional interaction. There are other inherent benefits from the use of digital technologies such as the automatic recording of information for future reference, asynchronous communication and integration with other information systems whether they are destined for specific work functions or general purpose tools.

5.2.2 Characteristics needed of information technologies for knowledge creation in a sub-cultural context

Information systems in a sub-cultural knowledge creating context are simple. They provide the aforementioned communication capabilities that are required for proper socialization. They could also provide a medium for carrying out functions relevant to the organization’s performance. But the main characteristic that differ the use of information systems that we normally observer in the workplace with the
information technologies that aid knowledge creation in a sub-cultural context is the fact that there is no definite first hand application to business. Although they could be intertwined with current transactional and communications systems existing today in our organizations, these systems should resemble the characteristics mentioned before.

In their own way, information systems in this context should be freer than those that we are used to. If we have no say in who is a member of a sub-culture within our organization, then the systems should not be able to do so as well and they should accommodate for these conditions by providing free access to everyone who wishes to use them in a way that everyone can be a part of the sub-culture hosted by such systems. In other words, access to an information system that pertains to a certain group of people inside our organization should be restricted by the same group of people that defines it. The system should reinforce the shared characteristics that make that group possible and in that way its policies should resemble the policies of that very group.

Another characteristic of these systems is that they should emerge and diminish naturally in the workplace. Since there is no control as to when the subcultures emerge in our organizations, systems supporting these subcultures likewise can not then be defined as other projects are time-framed normally in organizations. The existence of such systems will be determined by the sub-culture’s presence in the organization, therefore any sub-culture that wishes to have access to its own information systems should be able to do so at the time it deems more appropriate. In the same manner systems can be discontinued from their use whenever sub-cultures disappear from the organization, are assimilated into other groups or transform into another group.

The characteristic which can be the hardest to accept by managers today is that we can not control what sort of information and knowledge will be handled by these systems. Knowledge transfer and creation happens through the informal as well as formal interaction between the members of sub-cultures and a distinction between what is useful knowledge for the organization and what is useful in terms of nurturing relationships for those within the sub-cultures is hard to define. Therefore any attempts by management to confine the use of these systems for “productive” purposes only could hinder the way in which these systems can provide a backdrop for relationship development for its users and in the end undermine the benefits that could result from their use. So systems like these should be viewed as important technological infrastructure whose appropriate use should be defined by their users’ work ethic.

And again perhaps the most elusive feature of these systems would be that knowledge sharing has to be present and encouraged by the system. As with most typical information systems the real benefits of their use comes from actually being used for the right reasons, therefore with these systems as well as with traditional systems the human component of disposition. To this respect, systems that aid in
knowledge creation and sharing can only limit themselves by providing an infrastructure to harness the knowledge created within its boundaries. This could be achieved by providing several forms of communication, real-time messaging, multi user communications, asynchronous message handling, message boards, time tables, members contact information, historical conversation and discussion records storing are just a few of easy to implement information technology features that can be included in such systems and that inherently provide the means to both maintain meaningful relationships and harness knowledge creation and transference.

5.2.3 Providing information technologies

We have seen that the amount of sub-cultures or groups that can co-exist in an organization is not clearly determined; therefore the question of how many systems can be offered to the users is also hard to define. Also the features that one sub-culture can embrace favorably another can ignore over other features more in accordance to the group’s tastes. For these reasons we can not limit the quantity of systems like these that will be concurrently operating in our organizations and or the features that should be available to their users.

The organization should provide as many replicas of these systems as their users deem necessary. This will result in the organization becoming a kaleidoscope of many sub-culture supporting systems just as it has become a conglomerate of function oriented transactional and management information systems today.

5.2.4 Control of information technologies

Controlling what goes on inside these systems has already been made clear that can not be carried out in a traditional sense. Still some sort of control can support management’s need for results.

Control of information systems like these comes indirectly by assessing their utility by observing the degree to which they provide a successful service to their users. This observation can be carried out by consulting periodically the employees on which are the features that they feel benefit them the most and which features could be added to continue fomenting their use. This way we can indirectly guarantee that the systems are indeed being used by the employees and by making them attractive to them positive knowledge creation and transfer could take place.
5.2.5 A framework for information technologies that aid in sub-cultural knowledge processes

Now we have the basic principles with which information technologies aid sub-cultures and their natural knowledge creation processes. The actual implementation of these technologies relies in the existing infrastructure in the organization willing to invest in efforts such as these, so there are a variety of choices to choose from when implementing a strategy like this. As long as the properties mentioned above are present, successful outcomes could be expected.

The information technologies’ properties that we mention here are directly related to the characteristics defined earlier in this chapter. We present this relationship in the form of a table on the side. (see table 5.1)

Table 5.1 Relationships between sub-cultures and the information technologies that support them

<table>
<thead>
<tr>
<th>Characteristics of sub-cultures</th>
<th>Characteristics of information systems proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>No definite “start” or “finish”</td>
<td>Systems created and destroyed by their users</td>
</tr>
<tr>
<td>No forced membership</td>
<td>Access and membership policies decided by their users and not management</td>
</tr>
<tr>
<td>No when and what</td>
<td>Use and content defined by the users subject to their work ethic and behaviours</td>
</tr>
<tr>
<td>Positive knowledge sharing philosophy</td>
<td>Knowledge sharing infrastructure and features</td>
</tr>
</tbody>
</table>

5.3 New knowledge

Handling new knowledge resulting from these processes can not be done in conventional ways. The knowledge individuals will gather will be used in ways that can not be easily defined. Employees will use what they learn to further benefit the departments and functions where they work or will themselves grow from the
experience of others, perhaps building new ways of progress inside the organization. It is not to be expected a clear result in the conventional ways such as manuals, procedure maps, etc; they will rather present itself as attitudes, practices within departments and modifications to processes in the organization.

5.3.1 Harnessing knowledge

Other conditions should prevail in the organization, apart from those mentioned above, that are not directly related to these processes but that could certainly define it success. An openness from management and the company itself towards new ideas should be valued. It is hard now for organizations not to realize the potential of innovation and the power that innovation that comes from within has to expand to new business ventures and to further market penetration. Yet there is still to consider the opposition to change that exists naturally in all human societies, and organizations are not exempt to this phenomenon. If new knowledge happens to spawn from the processes we have been discussing in this chapter it could happen to be wasted if it is not deemed legitimate by management and regarded as useless. The question whether what knowledge is useful and which is not remains a purely a subjective matter up to the hands of manager to decide, and realizing that most knowledge can benefit the organization can prove decisive in profiting from these efforts.

For a diagram that outlines the steps and processes related to enhancing the benefit provided by knowledge created by organizational sub-cultures, refer to figure 5.1.
5.4 Benefits

As we have stated before, the real benefits resulting from aiding the flourishing of sub-cultures in our organizations are hard to identify. Even if new knowledge is created or existing knowledge flows among the members of the groups, there is also the fact that in aiding sub-cultures we are aiding communication and relationships in our companies, and those are components of structural capital and relational capital respectively, both of which are important elements of the intellectual capital belonging to an organization, as we have seen in chapter two.
Benefits originate by tapping into the sub-cultures immerged in organizational cultures. These sub-cultures and the nature of the process that happen within them are sources for knowledge that with the power of information technologies can be exploited providing benefits for the organization, which in turn will modify its general culture and underlying groups and elements. For a graphical representation of the interactions and the elements we have described in this chapter, please see figure 5.2.

Figure 5.2 Relationships between, Culture, Sub-culture, Socialization, IT and Knowledge in Organizations
CHAPTER 6
– Conclusions and Further Studies –

6.1 Conclusions

Analyzing the study we have conducted several observations can be mentioned. The importance of knowledge and knowledge management efforts are evident to scholars as well as employees in modern organizations yet a complete approach has not been achieved in most cases. We have seen that particular types of knowledge have a superior perceived importance than others in some organization and that perhaps this is not due to what it is really more important to companies but rather due to the relative ease with which it can be both, conceived by management and manage it.

As we know we have lived with human resource management for quite some time and we know the importance of intellectual property by experience and these areas have developed and evolved towards an approach that considers knowledge as a resource that also should be managed; other areas of the organization and other more intangible types of knowledge are still untapped. But still, in fact, knowledge management does exist, and has existed in our companies; it is just that we have not been naming it so.

We are used to sharing knowledge if the need presents itself and we are also used to creating our own to explore new business possibilities or to solve particular problems in our day to day work. We have learned from the managers before us and we are expected to teach the managers that will follow. The basic principles of knowledge management exist even if we do not acknowledge them but then in not doing so we are passing by the opportunity to profit by making the learning process more efficient and part of our every day work environment.

Just in the same way that knowledge management can go unnoticed and untapped, the knowledge created and inherent to the sub-cultures in our organizations can slip by without taken advantage from it. In some organizations the actual presence of sub-cultures goes largely unnoticed, perhaps due to the relative shortage of literature in the matter or for the difficulty in managing such diverse cultural phenomena in the workplace.

Noticing and fomenting relationships in the workplace is complicated work, and somehow a matter met with some reserve by managers and it is understandable given the volatile nature of human relationships, everything but the predictability that manager want to imprint in all of their work processes. And yet there is no denying their presence and its nature, and as all would be liabilities, if harnessed
appropriately can produce successful and profitable results for our modern organizations.

### 6.2 Opportunities for further studies

The influence of this work has been rather limited to studying the relationship between knowledge, sub-cultures and information systems in organizations. There are many areas which are left to ponder and/or are superficially treated in the previous chapters. Areas as important such as the design of an integrated system for working with sub-cultures and the way that knowledge sharing culture can be guaranteed in an organization are yet to be delved into.

Being this a study that brushes subjects in various fields of study such as cognitive science, information technologies and cultural studies, different approaches could also be held to further the applications or fine tune the strategy of empowering organizational sub-cultures through information technologies or other techniques.
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## Organizations

<table>
<thead>
<tr>
<th>General Class: A</th>
<th>Level</th>
<th>Aspect</th>
<th>Objective</th>
<th>Questions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>Type of organization</td>
<td>Define through questioning and analysis of responses the nature and type of organization under study. This should be as extensive as it can be to provide enough background about the organization.</td>
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<td>Could you describe generally the purpose of your company?</td>
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<td>What kind of organizational structure could you identify in your company?</td>
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<td>What are your company’s main products?</td>
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<td>What market share has your company gained?</td>
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<td>How long has your company been operational?</td>
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## Objectives and drivers for change

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<thead>
<tr>
<th>General Class: C</th>
<th>Level</th>
<th>Aspect</th>
<th>Objective</th>
<th>Questions</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>2</td>
<td>Recent organizational changes</td>
<td>Identify recent organizational structural changes in every aspect, form, intent, commercial activities, Philosophy, etc.</td>
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<td>Have you detected recent changes in your organizational structure?</td>
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<td>What kind of changes have you noticed?</td>
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<td>Has the company recently changed its commercial focus?</td>
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<td>Has the company changed its philosophy recently?</td>
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<td>Level</td>
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<td>If changes have been made:</td>
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<td>2</td>
<td>Reasons for change</td>
<td>Pinpoint the actual motivator for the organizational change, its sources, external or internal, were they in commercial nature or related to new legislature or market conditions. Also identify the role of technology in this changes and how did it affect the decision and form.</td>
<td>Do you know the main reasons for such changes? What do you think has been the determining factor for these changes: internal or external sources? Have there been recent law changes that urged this change? Has technology influenced these changes? Could you attribute these changes to technology?</td>
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<tr>
<td>1</td>
<td>Learning from environment</td>
<td>Indicate the capacity of the organization to learn from its medium. Focus on efforts and tools that it devices for learning.</td>
<td>Is there currently in your company a tool to know about its environment? Can you consult actualized bibliography about your company’s industrial and business context? Do you know your competitors? Do you know what the main characteristics of your market are?</td>
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<tr>
<td>Level</td>
<td>Aspect</td>
<td>Objective</td>
<td>How would you rate the communication that occurs in your organization, whether it is between departments, managers or subordinates? When you want to establish communications with the rest of the company’s employees, which are the channels you use and what are the rules for their use?</td>
<td>Within daily functions, what are the activities when an employee can be self-guided? If the employee can be self-guided, what are the rules that apply to these cases?</td>
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### Knowledge and organizations

**General Class:** B  

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<th>Level</th>
<th>Aspect</th>
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<th>Questions</th>
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</table>
| 1     | Degree of communication inside organization | Describe the ways in which the organization defines its communication systems in order to keep its members integrated, as well as how much is communication deemed as a positive value for the organization. | In everyday communications among organizational members, how much could you say that information systems are used?  
What type of information systems you use for this reason?  
Are they formal or informal to your company?  
How the company qualifies this kind (informal) of communication, does it approve or disapprove? |
| 3     | Degree of individualism and integration | Determine the way in which the organization’s members handle themselves amongst each other. Individualistic values and integration are important aspects of a knowledge creation context. Identify which organizational formations are provided for employees to create knowledge. | How could you describe the behaviours of your company’s employees among each other?  
Generally speaking, could you define the degree of individualism of your company’s employees?  
Is there an event, place or organization in your company that promotes research and knowledge creation? |
| 1     | Knowledge creation context | |

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Knowledge and organizations  

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<th>Level</th>
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| 2     | Hierarchy | Observe the importance of hierarchy in organizational communications.

Explain the relative height of the organization or the way that it has been transforming towards a flatter organization, if it is the case.

When you want to communicate with your superiors, which is the process you have to follow?
How do you handle meetings with your subordinates?
When you want to communicate with your subordinates, which is the process you have to follow?
How many hierarchic levels do you know exist in your company and which are they?
Do you know if in recent year there have been changes that suggest that a flatter organizational structure is being adopted by your company?

4 | Flatness | Recent organizational changes, as Drucker points out, are palpable in the degree of specialization of employees. Whereas an operative level employee would be more specialized, a top management executive would be not. Describe if this phenomena occurs in the organization in question.

Which is your academic degree?
What training programs have you undergone in the last years?
Could you identify the professions of your coworkers and their academic degrees?
Could you identify the professions of your subordinates and their academic degrees?
Could you identify the professions of your boss and their academic degrees?
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<th>Level</th>
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<tbody>
<tr>
<td>1</td>
<td>Teams</td>
<td>Identify if the organization harbors teams or task forces for carrying out work and describe the nature of these teams.</td>
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<td>In daily operations: Do you use teams for functional reasons in your company?</td>
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<td>How are these teams organized?</td>
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<td>Aspects to consider:</td>
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<td>Number of members</td>
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<td>Number of departments involved</td>
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<td>Compensations</td>
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<td>Degree of self-guidance</td>
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<td>Evaluation methods</td>
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<td>What is the degree of multidisciplinarity?</td>
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<td>What are the professions commonly held by team participants?</td>
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<td>What are the hierarchical levels of those involved?</td>
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<td>2</td>
<td>Degree of inter-disciplinarity</td>
<td>Analyze the degree of interdisciplinary professions of the teams' individuals.</td>
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<td>Some teams are constructed informally and naturally some are formally appointed by management.</td>
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<td>Could you explain how formal or informal are these teams?</td>
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<td>Are they organized by someone in particular or are they created on the fly under the initiative of the members?</td>
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<td>2</td>
<td>Degree of self guidance of teams</td>
<td>Freedom of choice is an important factor in determining the success of a knowledge creating process. Identify the degree of freedom of guidance in these teams, if any at all.</td>
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</table>

**Organizational Culture**

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<th>General Class: B</th>
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<td>3</td>
<td>Degree of commitment</td>
<td>The level of commitment to the organization’s goals and strategies varies from organization to organization and coincides with the measure of success of such organizations. Find out the level of commitment the company’s employees have.</td>
<td>In a hypothetical situation: If during the progress of a project one of the dates becomes delayed affecting the general rhythm of the project and endangering the possibility of meeting the final date, what would be necessary for the employees and those responsible for the project to work overtime? What are the company’s policies about these sorts of matters? In cases where the company is in crisis what kind of reaction have you seen in your colleagues?</td>
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<td>2</td>
<td>Degree of satisfaction</td>
<td>Point out if the company’s employees are in contempt with the organization’s route.</td>
<td>Given your company’s current situation and the last decisions that have been made: Do you think that you could have taken better decisions or in a better way, and why? What do you think the current position of your company is and what do you think that your company should be doing today? Could you identify the countries of origin of your coworkers and an approximate figure for the amount of the number of employees depending on their origins?</td>
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<tr>
<td>4</td>
<td>Nationality</td>
<td>Identify the amount of different nationalities that are present in the form of employees in the organization.</td>
<td>Could you identify the amount of different nationalities that are present in the form of employees in the organization.</td>
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<tr>
<td>1</td>
<td>Language</td>
<td>Observe if the company’s culture is strong enough to have developed its own set of language codes for certain aspects of its job activities.</td>
<td>Could you identify some words or phrases that you consider unique in your organization or in your organizational unit? About these phrases or words, in what do you think they differ in meaning with the same words used by people outside the company?</td>
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<td>Level</td>
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<td></td>
<td>Company values</td>
<td>Identify the company’s values and observe how these are in fact perceived and held by its employees.</td>
<td>What are your company’s values according to your organizational constitution? Which of these values do you think are the more noticeably possessed by individuals inside your company? Could you identify if there are values that individuals in your company have that are not recognized by manager or high management? Do you find special values that pertain to people in your department?</td>
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<td></td>
<td>Company norms</td>
<td>Norms are expectations of behaviour from a social group inside the company. Enumerate the formal norms and which of those are observed by the employees.</td>
<td>Could you mention the norms that your company proposes to its employees? Which of these norms are considered as the most important by the company’s employees? Are there any norms that are formally dictated by management but that are, for practical reasons, rarely practiced by the members of your department or by the employees throughout the company? Do you know of some norms that are not practiced literally as stated by high management?</td>
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### Level 1: Company Practices

**Objective**

Practices represent the way people do things inside organizations like addressing each other, making reports; they also include formal situations in organizations as well as “out of office” rituals and behaviors. If any practices are defined in the organization, illustrate them both formal and informal.

- Mention some of the most common practices in your organization.
- Are there any practices that are particular to one group or department that you know of?
- What activities do you practice outside the office or job with members of the organization or coworkers?

### Level 1: Artifacts

**Objective**

Artifacts consist of stories, arrangements, rituals, and language that are originated in an organization and have symbolic meaning. Identify these in the company’s culture.

- In your company is there a story or legend to which employees or high management commonly refer?
- Do you know of a ritual that is frequently followed in your company or department?
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<tr>
<th>Level</th>
<th>Aspect</th>
<th>Objective</th>
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</table>
| 1     | Presence of subcultures     | Do you know if a group of persons that can be identified by its members sharing similar characteristics exists in your company?  
Do you know if management recognizes the existence of these groups and if so are they treated differently? |

### Subcultures in organizations

**General Class: A**

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<th>Level</th>
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</table>
| 1     | Identification of subcultures | Could you say that you are a member of a special culture inside your company, a culture that is defined by academic degrees, interests, tastes, etc?  
Have you found that there are members of other cultures similar to yours and how are you able to identify them?  
How would you define the characteristics that make you part of a special group of persons inside your company? |
| 2     | Characteristics of Subcultures | Could you describe which are the characteristics of these groups that exist in your company?  
Could you say if any of these groups has a different set of values or norms that those belonging to the rest of the organization? |

**Identification of specific norms, values and practices for subcultures**

Describe the organization’s subcultures briefly.  
Most subcultures possess their own set of characteristics that differ from the rest of the organization’s culture.  
Describe in which way do they differ.
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<th>Level</th>
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<td></td>
<td>Influence of similar perceptions on sub-cultures</td>
<td>Find out if the primary reason for the subculture's existence and definition is based on shared perceptions of reality amongst its members.</td>
<td>Could you give a brief description of how the members of your culture perceive your work and the rest of your company?</td>
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<td></td>
<td>Degree of individualism</td>
<td>Describe if the organization's culture fosters an individualistic individual or a collectivistic oriented work force.</td>
<td>In a few words, define the degree of individualism that exists in your company. Could you say that in your company each and every one of the persons who work there has its own particular characteristics that make them different, and that the company supports this feeling among its employees? Have you noticed that your company tries to keep everybody together or that it promotes the feeling of belonging to a family?</td>
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### Knowledge

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<th>General Class: B</th>
<th>Objective</th>
<th>Question</th>
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<tr>
<td>Level</td>
<td>Aspect</td>
<td>Identify the organization's views on organizational knowledge.</td>
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</table>
## Classifications and Types of Knowledge

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<td>1</td>
<td>Ways of creating explicit knowledge</td>
<td>Identify in which ways the company prefers to convert tacit knowledge to explicit, through manuals, books, reports or meetings.</td>
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<td>3</td>
<td>Human knowledge</td>
<td>Explain how important this type of knowledge is to the company. It exists in relationships between persons or inside groups.</td>
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<td>3</td>
<td>Social knowledge</td>
<td>Define how important are the people’s relationships inside the organization and what kind of relationships are external.</td>
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<td>Level</td>
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<td>Objective</td>
<td>Could you mention a case where organizational structure was specifically designed to adapt to the commercial environment or to functional requirements?</td>
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<td>3</td>
<td>Structural</td>
<td>It is knowledge that lies inside the organizations systems, processes, tools and routines. Identify to which degree the organization’s functional structure is dictated by why it knows about its environment, its workforce or its product. Explain what knowledge is embedded in it processes and tools to carry out its activities.</td>
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Society and Culture’s Relationship with Knowledge

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<th>Objective</th>
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<td>It is through a combination of shared experiences and imitation that such transference can take place. Observe the amount of socialization processes that take place in the production of new ideas and also in the addition of new human elements to the company. Again what facilities are provided by top management for the socialization process to take place in the operative environment.</td>
<td>Could you explain the conditions in which you socialize with your coworkers? In what place or circumstances do you hold informal conversations with your coworkers, would they be of business or personal matters? Do you use e-mail to communicate informally with your coworkers? Which tools have been made available by management to maintain communications with members of a team or a special project? Is there any sort of restriction to the use of these systems? Could you say that these systems are informal and if so, have they helped you achieve satisfactorily one of your projects? When you have had a work related doubt have you been able to find answers with your coworkers in an informal manner through an electronic tool? When a new employee is integrated to your department, what sort of welcome procedure is given to him/her by his/her new coworkers: a meeting, reunion, presentation, etc? To carry out your daily tasks, how important is the participation of other people in you operative processes, what media is utilized to maintain such contacts? Have you learned from the experiences of others that work in your company? Could you say that you have learned something through imitating others in your organization?</td>
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<td>Micro-communities of knowledge</td>
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<td>Characteristics of micro-communities of knowledge</td>
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<td>Cultural Knowledge</td>
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<td><strong>Dictionary knowledge</strong></td>
<td>It is made up of descriptions and labels, the words used and definitions in an organization. It refers to factual things in an organization. Identify if this kind of knowledge is important for this organization.</td>
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<tr>
<td><strong>Directory knowledge</strong></td>
<td>It is made up of commonly held practices. It represents the way specific things are solved, the steps needed to carry out some action or resolution, their cause and effect, the &quot;how&quot;. Identify if this kind of knowledge is important for this organization.</td>
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<td>Axiomatic</td>
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<td>Knowledge</td>
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<td>Knowledge Creation in an Organizational Context</td>
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<td><strong>General Class:</strong> A</td>
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<td><strong>1</strong> Knowledge</td>
<td>process in</td>
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<td>the organization</td>
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<td><strong>1</strong> Sharing tacit knowledge</td>
<td>Identify if there is a moment when there is a visible transfer of tacit knowledge between individuals.</td>
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<td>Create concepts</td>
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<td>3</td>
<td>Value focus</td>
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<tr>
<td>1</td>
<td>Intellectual capital</td>
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<td>2</td>
<td>Human capital</td>
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<td>General Class</td>
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<tr>
<td>1</td>
<td>Trust/Honesty</td>
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<tr>
<td>3</td>
<td>Preferred organizational subculture</td>
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<td>1</td>
<td>Way that people communicate</td>
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<tr>
<td>2</td>
<td>Knowledge sharing vs. knowledge acquisition</td>
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</table>
### Subcultures and knowledge management

<table>
<thead>
<tr>
<th>General Class: B</th>
<th>Level</th>
<th>Aspect</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>Definition of knowledge</td>
<td>Identify how the organization’s subcultures define their knowledge. Describe which type of knowledge is preferred by the organization’s subcultures.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Preferred type of knowledge</td>
<td>How would you define knowledge? Could you say that persons belonging to another sub-culture or department define knowledge in another way? Could you say that members of other subcultures prefer other types of knowledge?</td>
</tr>
</tbody>
</table>

### Subcultures and knowledge management

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>Blind spots</td>
<td>Identify if there are certain kinds of knowledge the subcultures are unable to create and exploit. Explain the process in which knowledge is legitimitated by and to a certain subculture. Do you believe that other departments or subcultures are unable or obtain or exploit some types of knowledge?</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Legitimate</td>
<td>Do you believe that there is a set of conditions for certain knowledge to be considered as truthful to some department or sub-culture in your company?</td>
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</tbody>
</table>

### Knowledge Enabling

<table>
<thead>
<tr>
<th>General Class: A</th>
<th>Level</th>
<th>Aspect</th>
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<tbody>
<tr>
<td></td>
<td>2</td>
<td>Instill a knowledge vision</td>
<td>Determine if the company promotes and develops an understanding of the value of knowledge. Do you believe that the company recognizes the importance of knowledge?</td>
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<tr>
<td>Level</td>
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<tr>
<td>1</td>
<td>Manage conversations</td>
<td>How are conversations among employees handled in your company?</td>
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<td>Do you know of a system or policy that favours that employees converse with</td>
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<td>each other?</td>
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<td>Is there a process with which administrators coordinate conversations</td>
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<td>that happen between employees?</td>
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<td>4</td>
<td>Mobilize knowledge activists</td>
<td>Do you know of a certain person or persons who are in charge of knowledge</td>
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<td></td>
<td></td>
<td>in your company?</td>
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<td></td>
<td></td>
<td>Who are they?</td>
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<td>What can you say about these persons?</td>
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<tr>
<td>1</td>
<td>Create the right context</td>
<td>Is there a place in your company designed to facilitate knowledge creation?</td>
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<td>What can you say about your working conditions, do they favour knowledge</td>
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<td>creation or the development of new ideas and creativity?</td>
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<td>Is there a bulletin or tool in your company that is used to share or</td>
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<td>disseminate knowledge inside the organization?</td>
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<td>2</td>
<td>Globalize local knowledge</td>
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<tr>
<td>General Class: A</td>
<td>Objective</td>
<td>Information Technologies in a Cultural, Sub-cultural and Communication Context</td>
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<tr>
<td>Level</td>
<td>Aspect</td>
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<td>Kl</td>
<td>Conveyance of social information</td>
<td>Find out whether the employees believe that the information technologies available to them are enough for them to enhance in comprehensive social relationships amongst themselves.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Use of computers in discussions</td>
<td>Describe the way that computers and information systems contribute to common and important discussions between employees and how they place importance on face-to-face conversations.</td>
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<tr>
<td>3</td>
<td>Degree of IT penetration</td>
<td>Determine the amount of users of information technology inside the organization.</td>
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<td></td>
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<td>How common is the use of electronic tools to carry out conversations with your coworkers?</td>
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<td>What do you think could be the advantages of undergoing discussions in an electronic medium?</td>
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<td>What do you think the disadvantages would be?</td>
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<td></td>
<td>What do you think the percentage of people that have access to information systems in your company would be?</td>
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<tr>
<td>Level</td>
<td>Aspect</td>
<td>Objective</td>
<td>Question</td>
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<tr>
<td>1</td>
<td>Social benefit</td>
<td>Find out if the employees feel that the use of IT empowers them with social benefits.</td>
<td>Do you feel that the use of computerized information systems as well as electronic communication systems aids in your ability to socialize?</td>
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<tr>
<td></td>
<td>Email</td>
<td>Explain the way email works as a communication medium in the organization.</td>
<td>What are the uses of electronic mail in your company? Do you use electronic mail for personal affairs?</td>
</tr>
</tbody>
</table>

**Information Technologies in a Cultural, Sub-cultural and Communication Context**

<table>
<thead>
<tr>
<th>General Class: A</th>
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<th>Question</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>Social norms</td>
<td>Identify the existence of organizational social norms that promote the use of IT.</td>
<td>To what kind of uses are electronic systems accepted by its employees?</td>
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<tr>
<td></td>
<td>3</td>
<td>Use culture</td>
<td>Describe the organization’s culture for information technology use.</td>
<td>Since when are personal computers and information systems used in your company? How would you define the use culture of information systems in your company? What kind of information systems do you have available for your work? Could you describe the functions of your IT department in case you have one?</td>
</tr>
</tbody>
</table>
1. Is there a current knowledge management effort in your company?

2. Who is in charge of these kinds of efforts?

3. Which parts of the organization are included by these efforts?

4. What is your opinion about these projects?

5. Is it important for your company to share knowledge amongst employees? Why? And is it important to you?

6. Is there a formal policy in your company that requires employees to share their knowledge?

7. In your company what is the way in which knowledge is commonly shared: manuals, books, reports, meetings, or some other media?

8. What information systems do you have available for your work? (in general, SAP, PeopleSoft, Lotus Notes, etc)

9. What tools has management provided to help employees maintain contact with the rest of the organization?

10. How much would you say that information systems are used for daily communication amongst employees in your organization?

11. Does your company encourage employee communications?

12. Are there any informal systems in your company? Is there any sort of restriction for their use?

13. What are the uses given to electronic mail in your company? Do you use electronic mail for personal affairs?

14. What media do you use to communicate with your boss, coworkers or subordinates?

15. In which situations do you consider important to personally communicate with your subordinates, your coworkers or your boss?
16. In which place or circumstances do you maintain informal conversations with your coworkers, be they of a personal or business nature?

17. Could you say that the informal use of systems has helped you in carrying out satisfactorily some of your projects?

18. When you have had work related problems, have you found aid and answers in your coworkers through the use of any electronic medium? (in an informal way)

19. Do you believe that the use of electronic tools such as electronic mail reduces your capacity to create and maintain meaningful social relations with your coworkers?

20. How common is it for you the use of an electronic tool to undergo discussions with your coworkers? What do you think could be the advantages and disadvantages of having electronic mediated discussions?

21. Do you feel that the use of computerized information systems aids you in socializing?

22. In your company’s daily operations, do you use teams to the carrying out of tasks?

23. How are these teams organized and how many people integrate them?

24. When teams are created, is there more than one department involved?

25. How are these teams directed and by whom?

26. Do you use an information system or electronic tool to maintain communications with the members of your work teams?

27. Could you say that there is something that distinguishes the members of your department that are recognized by it?

28. In which way do you identify with your coworkers?

29. Do you consider that you are part of a special group in your company? Which are the characteristics that distinguish this group?

30. When there is the need of creating new knowledge, be it a new product or a new strategy, what is the process that is generally undertaken in these cases? Could you say that these procedures are formal or informal?
31. During these processes are electronic tools used for the transmission of ideas among the members of the project?

32. Do you consider that it is important to socialize with the members of a team during the development of a project or task?

33. When a project has been approved and justified, is there a way of sharing this knowledge with the rest of the organization?

34. When a new person has been hired to work in your department, what kind of welcome is given to him/her by his/her new coworkers: a reunion, a meeting, a presentation, a party, etc?

35. Have you learned about others’ experiences by observing them in their work or other circumstances?

36. Do you consider that the use of electronic tools has helped you ins such occasions?

37. Of what you know about your work, what would you share with your coworkers and what wouldn’t you share?

38. When a new idea or product is developed by an employee in your company, who is the owner of that idea, the company or the employee?

39. How do you think that the environment in your company favours the creation of new ideas?