UNIVERSITAT DE BARCELONA

The role of social capital on information and communication technology usage in SME´s of Catalonia

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Tesis doctoral presentada para obtener el título de

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DIRECTOR

DR. JESÚS BLAS VICENS VICH

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Abstract

Nowadays it is difficult to imagine our life without Information Technology (IT), in fact Information and Communication Technologies (ICT) play a very important role in almost all public and private organization, as well as in our daily life. According to trends, the use of ICT and their impact in our lives will continue to increase. On one hand, Information Technology is seen as a critical factor for organizations to improve competitiveness; however, its implementation requires large investments in terms of money, time, effort, and human resources. On the other hand, a large number of ICT implementations are unsuccessful. Therefore, the study of the variables that affect the success of ICT implementations is relevant.

There is little evidence related to the role of Social Capital on ICT usage. This research aims to answer the research question: what is the role of social capital in the use of information and communication technologies on small and medium enterprises of Catalonia?

In order to do this, a qualitative research was carried out based on a three-case study. First based on the existing theory and our main constructs, both a proposal model and a semi- structured interview were designed. Second, interviews were conducted with people from eight enterprises. The results were then transcribed, coded, and analysed. Finally, a new model is proposed that relates the variables: social capital, knowledge creation process, perceived usefulness, perceived ease of use and user satisfaction. Likewise, evidence was found that social capital and the knowledge creation process are mutually reinforcing and that they can have a positive effect on ICT usage. This research contributes in three ways: a new theoretical model is proposed, from this model some actions and policies may emerge, and a case study is added to the literature.

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I am deeply grateful to my family for their love, support, and sacrifices. Without them, this thesis would never had been written. My wife who lived with me all this passionate but demanding process of research. My parents for giving me their unconditional support on this journey.

Barcelona, Junio 2021

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List of abbreviations

COMBN	Combination (Nonaka SECI process of Knowledge Creation)
EIS	Enterprise Information Systems
EXTRN	Externalization (Nonaka SECI process of Knowledge Creation)
ICT	Information and Communication Technologies
INTNZ	Internalization (Nonaka SECI process of Knowledge Creation)
IT	Information Technologies
IS	Information Systems
SC	Social Capital
SI	Social Interaction
SME´s	Small and Medium Enterprises
KC	Knowledge Creation
KCP	Knowledge Creation Process
KCT	Knowledge Creation Theory
KS	Knowledge Sharing
PrUs	Percived Usefulness
Sclz	Socialization (Nonaka SECI process of Knowledge Creation)
Trst	Trust
UsrSat	User Satisfaction

“A more intensively social model of labour is coming into sight, where learning and work are no longer clearly separated and docile obedience is not enough”.

(Geoff Mulgan, 1998).

“Taking a social structure approach to defining organizational forms also enables us to account for social influences on communication and information

technology use” (Zack, 2000).

INTRODUCTION

Nowadays it is difficult to imagine life without Information Technology (IT), smartphones or computers. As the matter of fact, one of the many tools used for researching this paper was information technology, such as computers, internet, university networks, etc. As for many researchers nowadays, Internet allowed me to find and obtain a vast amount of information important for my research from all over the world. Thanks to the Internet I could get access to research done by fellow researchers on topics related to my research area; some years ago, it was much more difficult to do this. When I think how researchers in the near past were obliged to search for information for their studies in libraries, and to communicate and exchange opinions with their fellow researchers through letters, I am made aware of the positive impact of such technology. We live in a world that has changed greatly in last fifty years, especially with the invention of personal computer in the late 70's and World Wide Web, commonly named Internet, in 1990.

Information technology (IT) is defined by the Information Technology Association of America (ITAA) as the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware.

Bakopoulos (1985) defines Information technology (IT) as the set of non-human resources dedicated to the storage, processing and communication of information, and the way in which these resources are organized into a system capable of performing a set of tasks. When Information Technology and Communication are combined, it is often referred to as Information and Communications Technology (ICT). IT and ICT are often used interchangeably. Information and communications technology (ICT) is an extended term for information technology (IT) which stresses the role of unified communications.

There have been technological advances in other fields besides information and communication technology (ICT); however, it seems that ICT has had, and still has, a big impact on our everyday lives (in positive and negative ways). Some fields like education, health and commerce have been specially impacted by this technology; however, it can be said that all the economy has been impacted for ICT advances. This

impact has been stronger in last 15 years, and according to the speed of changes and the attention that ICT is having lately, it seems that our lives will be more and more impacted by the use of ICT.

In the case of education, ICT has partially changed the way of teaching and transmitting knowledge, using interactive boards, computers, video, internet, training students to search for information on the web, etc. Nowadays, information systems connect individuals and business from one continent to another and continuously exchange information. A student can attend her lectures while she is physically away from her university, i.e., through a virtual classroom provided by the university's online learning system, saving her time and money. (Asemi et. al. 2011).

On one side, this technology has impacted education positively. On the other side, it is also clear that traditional ways of teaching cannot be eliminated. It is necessary to mix both in order to improve education. Also, it is evident that SARS COV2 crisis has catapulted the importance of information and communication technologies in education sector.

In the case of health care, ICT has also had a big impact. For example, now a patient's information is saved on databases, and it is available at any moment; doctors can easily access information on the Internet to update their knowledge and improve their diagnosis; laboratories can send results to patients and doctors in an easier and faster way by email; people can get medical knowledge looking on the internet, etc. As in the case of education, on one side technology has improved many processes, on the other side, it has also become clear that traditional medical practices like talking to patients, experience, capacity to listen, empathy, etc. must be improved and supported by technology in order to improve health systems. In this sector SARS COV2 has also have a big impact in terms of the use of ICT to improve heath processes, facilitate access to information and facilitate contact between people and medical teams.

The influence of ICT on all sectors of the economy is indisputable; ICT has impacted manufacturing, finance activities such as banks, the insurance sector, stock markets, obviously all technological sector, etc. As a matter of example, electronic money has arrived to our smartphones enabling us to purchase via NFC (near field communication) simply putting our phone close to a reading device, economic transactions are instantaneous and without real money. Nowadays, a big part of sales

all over the world are done through the internet, on the e-market. In this case also SARS COV2 has had a catalytic effect on the use of ICT.

All the above-mentioned technological progress in ICT has an impact on people's lifestyles and quality of life. Nevertheless, technology may also have a negative effect if it is not used wisely; for instance, everybody knows that organized crime also uses ICT. Also, the use of Internet increases the risk of illegitimate access to private or personal information. Besides, there are many examples of the excessive use of technology without the necessary knowledge base, which may have fatal consequences such as internet addiction, cyberbullying, cyber predators, posting private information, phishing, etc.). Finally, even though people started to consider ICT as an important and in some cases indispensable tool in everyday activities, both professional and private nature, there are some negative effects that may emerge when they use technology, like saturation of information.

For many people the recognition of the positive side of information and communication technology took a lot of time. There were sceptics, and those who did not want to perceive nor accept the positive sides that the new technology brought, as was the case for many companies. A kind of paradoxical situation appeared, in which some companies were blocking access to the internet to their employees; some universities were blocking chat rooms to professors and students. At the beginning many companies believed that employees would a priori abuse their access to the Internet and would not do their work. In many cases employees, teachers, students, etc. were using some technologies at home but not at work. Later, companies and universities recognized the positive impact of these technologies and adopted them. For example, nowadays many companies are using chats, internet, Skype, Teams, internal social networks, etc. for the improvement of internal communication and processes.

These days, chats and social networks are widely accepted at organizations and universities as a way of sharing and exchanging knowledge, opinions, information, etc., as well as to get in contact with new persons with whom they share a common interest. Internet has finally been approved and accepted as a very useful tool in everyday work. A good example of its acceptance is the fact that Microsoft's operating system Windows (one of the most popular operating systems at the moment), incorporated "Skype chat" in order to facilitate and improve communication; later they changed "Skype" for "Teams", and many companies are using it.

So far, it seems that the battle was gained for ICT; it looked like the companies understood the importance of technology related to information and communication for everyday work tasks and information exchange, and finally accepted it. But then, smart phones appeared. Many of them based on open source operating systems and offering multitude of applications; some of them very useful for work, some of them not useful at all. In the first place, not many companies provided to their employees one of those smartphones and give them access to Internet. What it looks paradoxical is that on many occasions, employees were using their private smart phones for work. Once again, it was perceived a certain level of delay in company's attitude in acceptance and use of new ICT.

It can be said that nowadays ICT are an important part of every public or private organization. In the case of private organizations, technology is becoming an important factor for companies in order to maintain their competiveness (Gupta et al., 2019; Kinuthia & Chung, 2017; Lauria & Duchessi, 2007). Information technology is often looked like the silver bullet for improving productivity, improve customer service, cost reduction, etc. (Kvavik et al., 2005); however, to achieve these goals a big investment is needed, not only in terms of money, but also in time, effort, organizational resources, etc.

The high costs of ICT solutions combined with the strong pressure organizations suffer to continue increasing competitiveness, means that the success of ICT implementations becomes crucial for every organization. In other words, successful information technology use/adoption becomes a critical issue. Despite the benefits of implementing Information systems and the great quantity of resources it requires, a great number of processes of implementing information systems are unsuccessful. This unsuccessful implementation of information systems is called information systems failure.

Concerning information systems failure, as a matter of example, it is reported that in the case of the specific information system called ERP (Enterprise Resource Planning), data collected over the years[1] on ERP implementations shows the following: fifty

[1] https://www.netsuite.com/portal/resource/articles/erp/erp-statistics.shtml

https://www3.technologyevaluation.com/research/article/erp-software-facts-stats-and-lessons-learned.html

percent of implementations fail the first time around, most implementations cost three to four times what was initially budgeted, implementation can take thirty percent longer than anticipated, fifty-one percent of companies experience operational disruption when they go live, system modifications needed to improve usability[2] can cause overspending sixty five percent of the time, and the top three places ERP systems fall short for users is data accuracy, user experience and analytics.

In the present organizational context of increasing competitivity and the strong pressure to implement and use ICT, combined with high costs of ICT implementation and high failure rate, the study of information systems failure and success becomes a critical issue; it is necessary to continue the research including new variables that help us to explain and reduce systems failure.

It is important to consider that previous research suggests that technical quality of information systems does not guarantee their use; because they are impacted by social, political and institutional factors (Brown 1998; Elbanna 2007; Jasperson et al. 2002; Markus 1983). Also, evidence suggests that systems success and failure is impacted by the effectiveness of collaborative development and change management processes used to mitigate the disruptive effects of systems adoption in organizations. Generally, this takes place in a complex social environment (Bunker et al. 2013).

Up till now, there were pointed out some positive sides of communication and information technology usage. However, fast, and instantaneous exchange of information using a computer or Smartphone as a work tool, comprehends certain previous knowledge. A person, to use properly a computer, software, phone app, or any ICT, needs to know how to handle it; therefore, needs to obtain information or training. Sometimes, Information and Communication Technologies implemented in companies, are complex and require hours and hours of training.

On many occasions, companies provide professional trainings courses. Nevertheless, there are companies which do not provide adequate courses, for different reasons

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[2] Usability is a measure of how well a specific user in a specific context can use a product/design to achieve a defined goal effectively, efficiently and satisfactorily.

https://www.interaction-design.org/literature/topics/usability

(high cost, lack of time, lack of knowledge, lack of trainers, decisions of the company management, etc.). Often, they are guided by the motto “learning along the way” as the way to “save” money, although in the long run, it may have the opposite effect. Many times, employees in those companies are forced to employ other abilities like social skills, to learn how to use the information and communication technology they need for their everyday work. The social component is an important part at the workplace, and according to Woolcock(1998), social capital’s greatest merit is that it provides a comprehensive multi and interdisciplinary approach to some of the most pressing issues of our time”; one of these pressing issues that require a multi and interdisciplinary approach is ICT use/adoption.

Social skills and social capital are two facets that we possess to a greater or lesser extent. They begin at the early age with the process known as socialization. Thus, some persons are capable to use it in a better way, while others not (Baron & Markman, 2000). According to the theory, the advantage of having a greater social capital is that it can be transformed into other types of capital, such as intellectual or economic capital (Richardson, 1986; Portes, 1998). Social capital includes family, friends, and acquaintances, who depending on their capacities and abilities can help us reach a certain goal, such as find a job, obtain a credit, learn how to use the latest phone or software, show us how to resolve a problem, buy a flight on Internet, etc. It is suspected that social capital has a positive impact on technology usage; although, there is no conclusive evidence and there is a lack to research related to the mechanisms through social capital impacts information technology usage. (Chantal & Cucchi, 2014).

Organizational Information systems are considered Socio-Technical systems, which means that any problem related to them must be analysed using a socio technical approach. In the present context of high failure rate, we consider that tools like social capital should be used. “An information system (IS) project management is the critical issue for the companies due to its high failure rate. This has been confirmed from most of the studies that not all the failures belong to technical aspects but also to the social aspects of the system as IS is a Socio-technical System”. (Kaur and Aggrawal, 2013).

Also, one characteristic of the modern economy is the increasing importance of the use of information and knowledge. Nowadays, almost in all sectors of the economy, the ability of an organization to sustain competitive advantage rely on its ability to develop and exploit its knowledge-based resources and capabilities. (Druker, 1993); this

happens because the technology used by almost all organizations has changed "Many machine-like jobs are better performed by machines, and growing numbers of jobs require people to take initiative, to be creative and inventive. Even most daily interaction with machines is in truth interaction with other people. A more intensively social model of labour is coming into sight, where learning and work are no longer clearly separated and docile obedience is not enough". (Geoff Mulgan, 1998).

Furthermore, one important characteristic of technology, particularly computers and information technology, is the increasing speed of change; this implies that people to keep pace with those constant technological advances need to learn and achieve new knowledge permanently. In this organizational context, knowledge and knowledge creation (KC) acquires a relevant role in the effective use of ICT.

Some companies consider that their future profit relies in substituting persons for technology (like computers, information technology, robots, artificial intelligence, etc.), and started to invest lots of money in all that has to do with technology. Subsequently, it appeared a disassociation between the quantity of money invested on technology and the quantity of money invested in improving the capacity of people to use that technology (training courses). At the present, there are no companies that are totally based on computers; all of them, in grater or lesser degree, need human support. It means that companies, until reach a very high level of automatization or computer excellence, need to invest in people to do certain tasks. Therefore, they should consider the balance investment between technology equipment and work force that represent a human capital of a company.

For now, technology is a tool used by people (employees), and depending upon their adequate usage, it may create bigger or smaller benefits. Technology can bring together employees and help build efficient work teams, although it can also abolish the existing social cohesion in the company. (Huysman, M. & Wulf, V., 2004; Cohen, D.J., & Prusak, L., 2001).

Given the speed at which technology is changing (particularly information and communication technology), the capacity of adaptation and learning must be improved to use technology in an appropriate way. As previously mentioned, in this context variables like Social Capital (Portes, 1998; Bourdieu,1986), Knowledge Creation (Nonaka, 1991), and Absorptive Capacity (Zahra & George, 2002) become relevant. It is also important to realize that Social Capital (SC) and Knowledge Creation (KC) are

not limited to the size of the organization, they go beyond the organization and it could be a way through which the organization could get valuable external resources (Bourdieu,1980; Nonaka & Konno, 1998).

Along my professional experience, based on observations inside organizations, I followed the intuition, which indicated me that social capital plus the use of knowledge creation process (KCP) may play a significant role in the efficient use of information technologies. Subsequently, that motivated my curiosity, and provoked the interest in further research of this topic. The Following step was to investigate the existing evidence about this phenomenon in the scientific literature, and soon after I found authors who precisely pointed out the absence of research in this area: “little is known about the relationship between ICT and social capital. The study of the relationship is still in its early stages and has not produced consistent results” (Yang, Lee, & Kurnia, 2009).

Even though in recent years there has been much research related to ICT issues; research on the role of social capital on ICT usage still missing. “Researches on ICT usage are numerous. Nevertheless, those which consider both, the network of exchanges and the actor’s position within the network, are scarce. Sociological approaches, such as social network and social capital, aim to fill this gap and that will be this research’s perspective” (Chantal & Cucchi, 2014). Furthermore, in recent years, the research areas related to technology use, knowledge sharing and innovation, seem to be extremely interested on the paper that social capital has on the use and application of IT. “some IS researchers have increasingly become aware of the important role of social capital in technology development and knowledge sharing processes” (Fountain, 1997; Reimer, 2004; Syrjänen & Kuutti, 2004).

Also, nowadays great importance has been given to the role of IT in supporting collaboration and knowledge sharing. Much of this interest has been increased by the extensive use of information technology, the globalization of commerce (global supply chains), the extensive use of ecommerce, and the biggest importance that ICT is having recently not only in terms of economy and consumption but also in terms of personal needs and quality of life. “many studies have reported the enabling role of IT in supporting collaborative behaviours in the supply chain and the further specific IT, interorganizational systems (IOS) or supply chain technologies, are the important components of collaborative behaviours (Lin, 2014; Wu & Chiu, 2015; Youn, Yang, Kim, & Hong, 2014).

At this point, I want to clarify that for this study social capital is considered as an independent variable (been ICT the dependent one). For this research, both, individual and collective social capital were considered because it gives more value to the research, “The majority of the reviewed social capital-ICT studies measure social capital at the collective level, frequently as the dependent variable. Fewer studies focus on the technological impacts on individual social capital or explicitly identify the effects of individual social capital on technology development, acceptance, diffusion, and use. This is partly because social capital theory flourished only after the introduction of collective social capital by Putnam” (Yang et al., 2009).

Agarwal (2000) defines technology adoption as the use or acceptance of a new technology, or new product. Although Information and communication technology has become in recent years an important tool for organizations, there is not enough evidence in literature related to the impact of social capital on ICT use. There is a need to clarify the impact and the mechanisms through which it occurs.

Research question

For this project, the research question we aim to answer is: what is the role of social capital in the use of information and communication technologies (ICT) on small and medium enterprises of Catalunya?

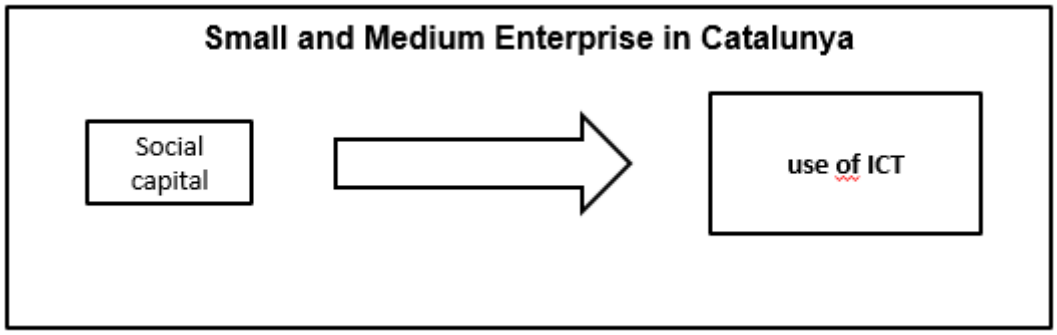


Figura 1 Research question

In order to answer our research question, a literature review on the subjects: social capital, EIS, knowledge management, knowledge creation, EIS use/adoption, was done to obtain a more specific and valid research proposition.

After analysing the state of the art, our preliminary research indicates that KM (knowledge management) and KC (knowledge creation) may have a particularly important role as mediator between social capital and ICT use/adoption in organizations. It is suggested that KM processes have a role for improving the capabilities of a particular technology, and that the successful implementation of such technology is affected by the efficient use of these processes (Lin & Lee, 2005; Lee et al.,2007; Chong, Chan, Goh, & Tiwari, 2013); Migdadi et al., (2016).

Also, the relationship of knowledge management and project performance still represent a research gap (Cohen & Olsen, 2015). Previous studies provide empirical evidence of a positive impact between these constructs (Reich et al., 2014; Lindhard & Larsen, 2016). However, the mechanisms of this relationship are not fully understood, as there is still a limitation in understanding how systems can be aligned with organizational goals and strategies (Ali et al., 2018). As the process of implementation of an Information systems can be considered as a project, thus the project performance may be measured by the use/acceptance of the system. We find that the relationship between social capital and "use/acceptance of information systems may be mediated by the knowledge management process, that in our case is represented by SECI model of Nonaka (Nonaka, 1994). For this reason, we considered it convenient to include the knowledge creation process in our research.

Proposed model

In order to clearly understand the impact that "social capital" mediated by the knowledge creation process (KCP) have on the use of Information and communication technologies (ICT), it was important to identify the existing models that aim to explain the way use/acceptance of ICT is influenced by different variables. This research was base in two models: Technology acceptance model (TAM) (Davis 1989), and D&M IS Success Model (DeLone & McLean 1992).

Technology acceptance model (TAM)

The first model we used for this research was TAM model (see figure 2), which aims to explain why people accept and uses certain technology, this model proposes that the use of any type of technology depends primarily on the person´s intention to use that technology, what they call “behavioural Intention to use”. In this context, “*Intention*” is simply defined as how hard persons are willing to try and how much determinations they are planning to use towards performing a behaviour. In other words, *Behavioral Intention (BI)* refers to a person´s subjective probability that he will perform some behaviour. (Fishbein & Ajzen, 1975).

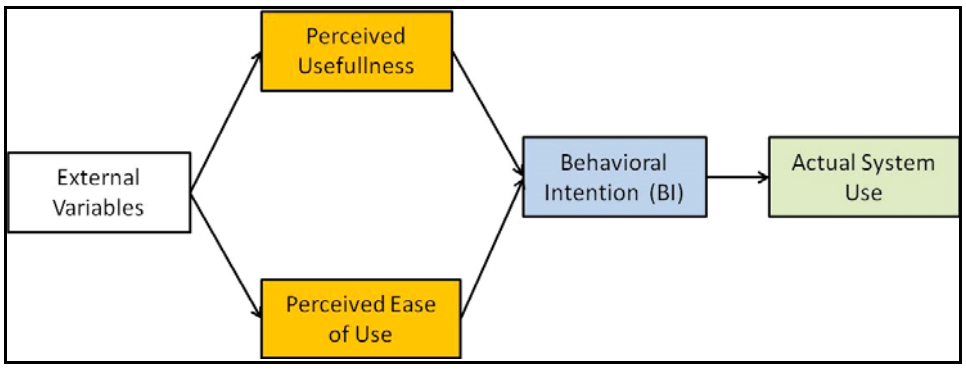


Figura 2 TAM Model

Furthermore, the intention to use a technology (behavioural intention to use) is influenced by two variables:

- *Perceived usefulness (PE),* defined as the prospective user’s subjective probability that using a specific application system will enhance his or her job or life performance. In other words, does the person see such technology useful for his or her work or activities?

- *Perceive ease of use (PEOU),* defined as the degree to which the prospective user expects the target system to be free of effort.

In turn, the two variables "perceived usefulness" and "perceived ease of use" are affected by other external variables, such as: subjective norm, interaction, self efficacy, enjoyment, compatibility and anxiety.

Variables affecting perceived usefulness: subjective Norm, Interaction, self efficacy, enjoyment, compatibility.

Variables affecting Perceived ease of use: subjective Norm, interaction, self efficacy, enjoyment, anxiety.

Therefore, we can conclude that according to TAM model, if we want to measure the possibility of using a technology, we must analyse how a series of variables affect the perception of utility (perceived usefulness) and the perception that people have regarding to the ease of use of technology (perceived ease of use). It is important to mention that this model does not directly considers social variables.

DeLone & McLean IS success model

The second model we used for this research was *D&M IS success model* which aims to explain the reasons why a person uses certain information systems (IS). The model proposes that for companies to obtain benefits from the successful use of IS, there are two relevant variables:

Intention to use/use, which is the use that people make of IS, measured by the "intention to use that particular IS"; and *User satisfaction,* which is the "satisfaction of the person regarding the use of information systems.

The two variables mentioned above may be affected by several variables such as: accuracy, consistency, precision, understand ability, usability, usefulness, system features, reliability, system accuracy, response time, flexibility, customization, interpersonal quality, IS training, empathy, flexibility, responsiveness, reliability.

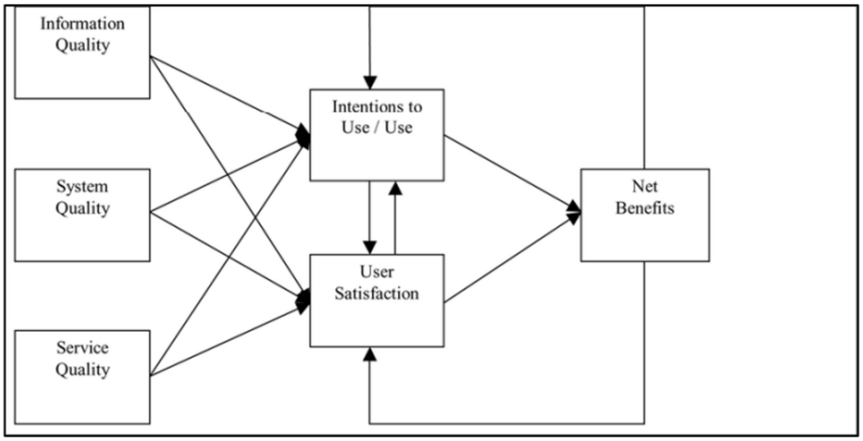


Figura 3 D&M IS Success Model

Therefore, according to this model, a series of variables related to *"the quality of the information"*, *"quality of the system"*, and "*quality of the service*" have an effect on *the "satisfaction of the user of the information systems"* and *the "intention to use those information systems"*. In turn, "*user satisfaction*" and the *"intention to use"* affect each other. Therefore, as we can see in figure 3, the variable *"Intent to use / use"* is affected by all the aforementioned variables. In order to analyse the impact that Social Capital and Knowledge Creation Process have on the successful use of Information Systems, we based our model on the two models previously exposed:

- *TAM model* that seeks to explain the reasons why people use or do not use a specific technology.

- *IS Success Model* that aims to explain the reasons why a person uses a specific information system.

After analysing two models that aim to explain the use/acceptance of technology, we observe in figure 2, that the TAM Model includes the variable *"Behavioral Intention to use"*. Also, we can also observe in figure 3, that variable *"intention to use / use*" is used in the IS Success Model**.** These two variables are equivalent since the objective of both is to measure the level of use of a specific technology or information system. Therefore, we propose to combine both models to try to explain how social capital and knowledge creation process affects the use of information and communication technology (ICT). Combining both models, we obtain the following:

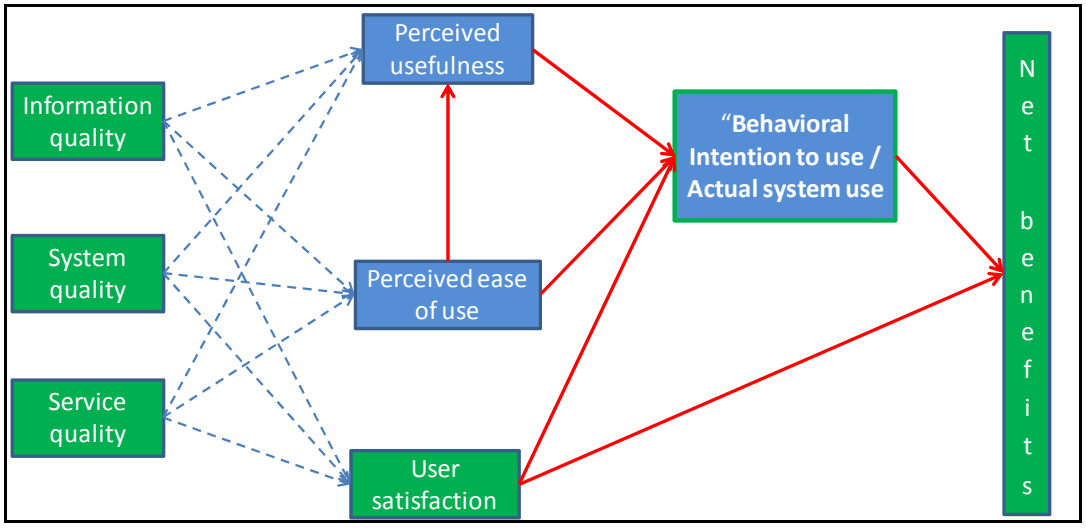


Figura 4 SCKC Information systems success model first draft

Blue squares = TAM model
Green Squares = D&M IS success model

Since the interest of our research lies in trying to determine the way in which the variables "social capital" and "knowledge creation processes" impact the use of information systems, in our model we eliminated the variable "Net benefits".

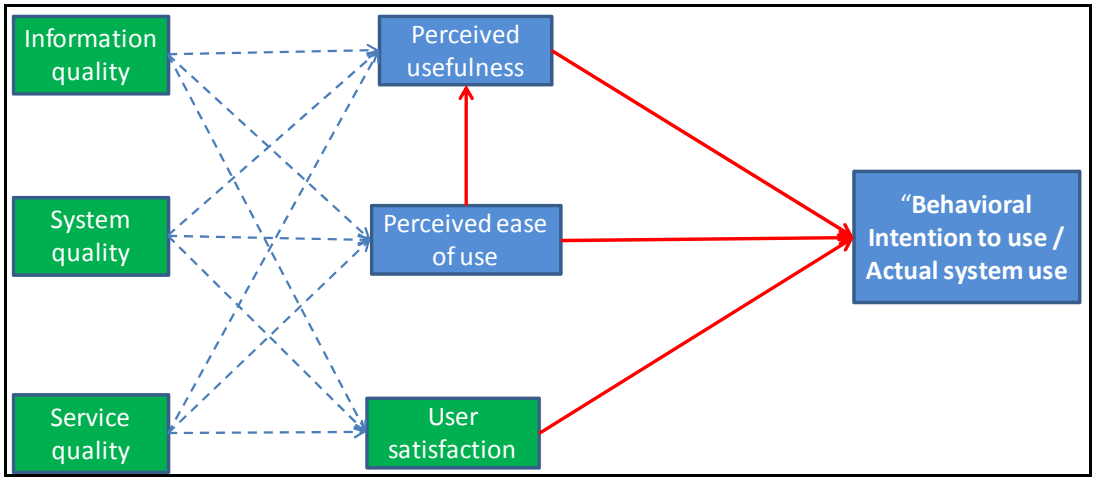


Figura 5 SCKC Information systems success model second draft

External variables

As mentioned above, several studies have been carried out to detect the variables or dimensions that may affect the use of information systems. The studies carried out propose different variables that can be classified into three large groups: variables related to the quality of the information systems, variables related to the quality of the Information and variables related to the quality of the service.

- Variables related to information quality: accuracy, consistency, precision, understandability, usability, usefulness.
- Variables related to system quality: system features, reliability, system accuracy, response time, flexibility, customization.
- Variables related service quality: interpersonal quality, information systems training, empathy, flexibility, responsiveness, reliability.

Other researchers such as (Lin, 2005) point out the importance of social influences, which they call subjective norms. Subjective norms represent perceived external pressures that determine the use (or non-use) of a system. On the other hand, Davis

(1986, 1989) indicated that they considered that their model was incomplete since it did not contemplate the social influence in the adoption and use of new information systems.

Based on the information found in a bibliographic search and the experience in the use of information systems in various organizations, we consider that the interaction between the variables "Social Capital" and "Knowledge creation" can play a significant role in the use of the information systems.

According to (Jakubik, 2008), in a collaborative knowledge creation environment, knowledge is socially constructed in interactions among people. Many researchers affirm that Knowledge is created, shared, amplified, enlarged and justified through social and collaborative processes (Jun and Weiguo,2008; Chou and Chang, 2008; Bouwen and Taillieu, 2004; Nonaka, 1994).

In terms of knowledge creation, Nonaka's (1994) SECI model (socialization, externalization, combination, internalization) is the most widely adopted model (Wipawayangkool, 2011). The model is considered relevant to the study since the focus is on collaborative knowledge creation where the nature of knowledge being shared, integrated and converted is more of tacit (know-how, skill, experience, expertise) and dispersed across multiple stakeholders. For the case of ICT in Small and Medium Enterprises, the kind of knowledge that is shared is mainly tacit. In this environment more emphasis is placed on tacit knowledge, since it is the basis for generation of new knowledge and creative problem solving and serves as a critical vehicle to successful transfer of best practices within communities (Wang, 2012; Robert, et al., 2008; Greenman, 2006).

According to previous research, achieving the required level of exchange, proliferation, and extraction of tacit knowledge in a social network context is intimately tied to social capital and the socialization and externalization modes of knowledge conversion (Wipawayangkool 2011; Costa et al., 2008; June and Weiguo, 2008; Natalya, 2010; Anderson and Mohan, 2011).

In this context, the combination of SECI model and social capital theory is proposed as a way to understand the process of collaborative knowledge creation (Nahapiet & Ghoshal, 1998) in an environment where people need help to use Information and communication technology.

Regardless of the growing body of research on social capital and knowledge creation in a collaborative context, little attention has been given to analysing how the different components of social capital influence the knowledge creation process. (Jakubik, 2011; Janhonena and Johansonb, 2011; Zheng, 2010; Nonaka and von Krogh, 2009).

Research proposition

According to our research question and the literature review, the following research proposition are presented:

General research proposition

Social capital in combination with knowledge creation processes positively impact the use/acceptance of enterprise information systems in small and medium enterprises in Catalunya.

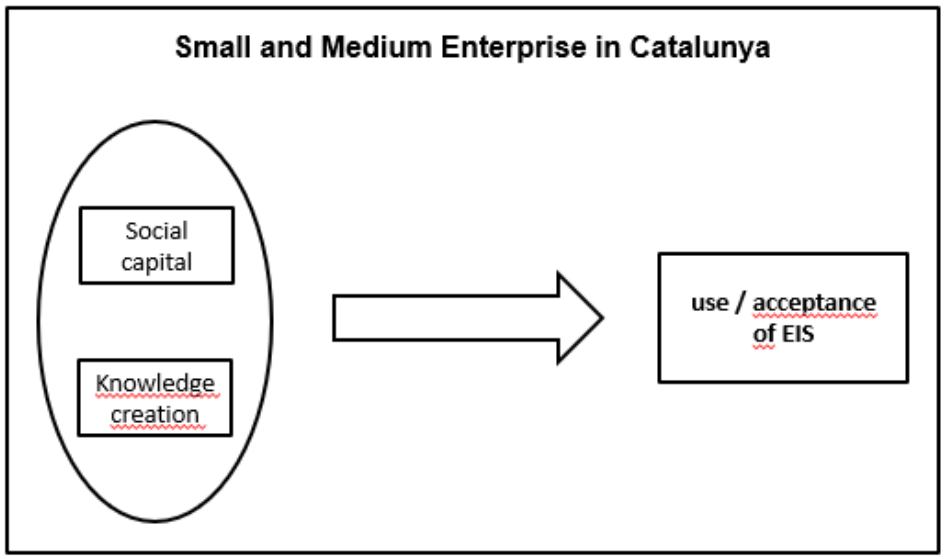


Figura 6 General research proposition

Specific proposition 1: Has social capital a significant effect, on the "knowledge creation process"?

> **H1:** The higher an individual´s social capital in an organization, the greater their contribution to the "knowledge creation process" of their group in the organization.

Specific proposition 2: Has the "knowledge creation process" a positive effect on social capital?

> **H2:** The stronger the "knowledge creation process" is in the group, the greater their contribution to the social capital of individuals belonging to the group.

Specific proposition 3: Has the "social capital-knowledge creation process" system a positive effect on the variable ("perceived usefulness")?

> **H3:** The strongest the "social capital-Knowledge creation process" system, the greater the perceived usefulness with respect to the ICT used.

Specific proposition 4: Has the "social capital-Knowledge creation process" system a positive effect on the variable "perceived ease of use"?

> **H4:** The strongest the "social capital-Knowledge creation process" system, the greater the perceived ease of use with respect to the ICT used.

Specific proposition 5: Has the "social capital-Knowledge creation process" system a positive effect on the variable "User satisfaction"?

> **H5:** The strongest the "social capital-Knowledge creation process" system, the greater the user´s satisfaction with respect to the ICTs used.

As previously commented, the aim of this research is to analyse the role that social capital and the knowledge creation process have on the use/acceptance (technology adoption) of Information and Communication Technologies (ICT) in Small and Medium Enterprises (SME) of Catalonia.

The idea is that the combination of social capital and knowledge creation reinforce each other, so we propose to add them to our model (figure 7).

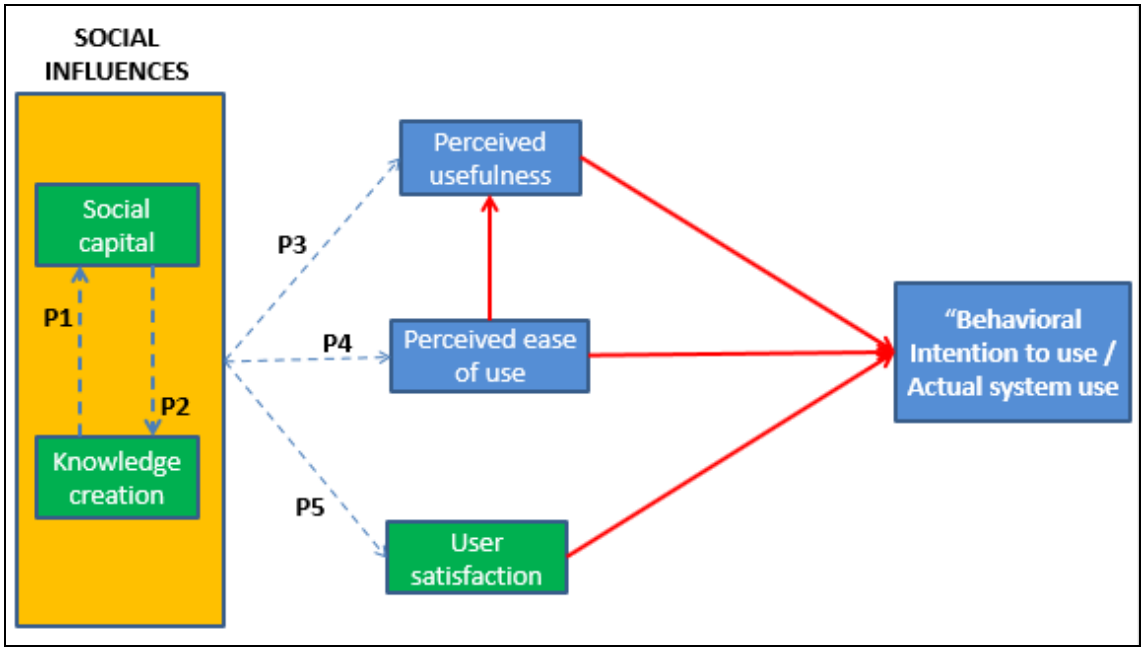


Figura 7 Social capital-Knowledge creation Information systems success model

Our interest is to understand the impact that the *Social Capital-Knowledge Creation system* has on the variable *"behavioral intention to use/actual system use"* of information systems (figure 8). To do this we decided to focus our research only on the effect that what we call “social influences” (“social capital-knowledge creation” system) has on the variables: “perceived usefulness”, “perceived ease of use” and “user satisfaction”.

It is important to clarify that we are not analyzing the impact of the variables “perceived usefulness”, “perceived ease of use” and “user satisfaction” on the variable *"behavioral intention to use/actual system use", because* that relationship has already been proved by other researchers).

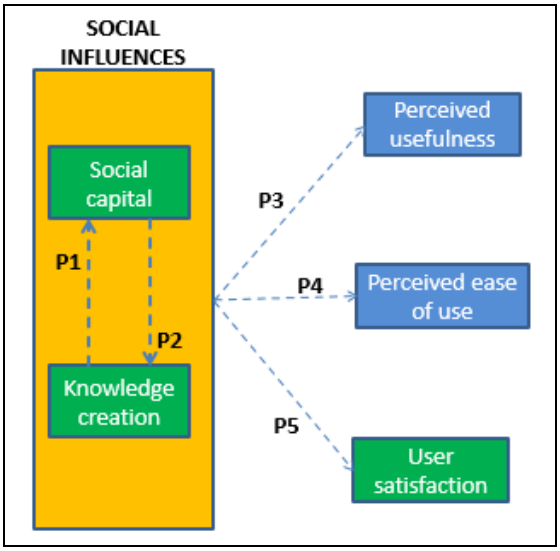


Figura 8 Hypothesis proposed to test SC-KC Information systems success model

Contribution of the research

In the past couple of decades, there has been a significant breakthrough in the domain of information systems, and new technologies in general. We are witnesses to exponential growth of technological advances, which penetrates practically all spheres of our lives. Many of them are rapidly accepted and integrated, like information technology for enterprises, smartphones, tablets, etc. Usually, they are user-friendly technologies for massive use which contribute to improvement of life quality. However, not all new technologies are welcomed with enthusiasm.

Although technologies serve to make easier everyday tasks, some of them are not so easy to use, sometimes are confusing, or even are perceived as enemies. For example, when you start to use a new operative system or just a newer version of your OS for the first time on your computer; if you are no expert on the matter, it may be frustrating at the beginning. Usually, there are two ways to confront this challenge: individually (trying to find solutions on your own, which can be time consuming) or asking someone for help. Depending on your social capital, you may have on your disposition more or less access to this type of assistance.

The same occurs in enterprises. It is common that enterprises invest in new technologies in order to improve their performance and achieve better results. Depending on the type of activity that they dedicated to, they invest in machines, robots, computers, etc. But, these technological products are not self-sufficient, they need to be run by skilled workers. This means that it is necessary to invest in training staff as well. However, the evidence does not show that most enterprises invest sufficient resources in skilling-up their workers. Thus, there seems to be a certain gap between technological improvements on the one side, and sufficient interest in skilling workers to adequately use these technological products on the other.

This study aims to point out the importance of human resources, which is often neglected or considered inferior to technological assets in enterprises. It is suggested that, if there is good work climate, where positive social interaction between employees is the norm, and sentiments of mutual trust between different levels inside the company prevail, is more likely that both exchange of knowledge and information, as well as knowledge creation, occur regularly. The process of knowledge creation is tightly connected to the social capital that every worker possesses, which in the situation of lack of professional instruction can be used by workers to overcome problems he or

she confronts, e.g., related to use of new application. With the help of colleagues, the IT obstacle can be resolved, and a new, probably positive experience in the use of the application, will be created. The final expected result would be a worker satisfaction with using the new technological product.

This research contributes in three ways.

First, based on an analysis of the literature related to social capital, information and communication technologies, enterprise information systems, acceptance of enterprise information systems, knowledge creation theory (specially SECI model) a theoretical model is proposed. The goal is that this model be useful for other researchers that are trying do research related to user acceptance of information systems, social capital of knowledge creation theory.

Second, the proposed model even may be useful for organizations interested in improving the user acceptance of information and communication technologies, some actions and policies may emerge from this model.

Third, a case study is presented to validate the model and most important, trying to give more information obtained through interviews concerning the variables that play an important role in user acceptance, social capital and information and communication technologies.

Thesis structure

The thesis is organized in four chapters.

In the first chapter the basic theoretical foundations relevant for this research are presented, this chapter is sub-divided into eight sections. In first section the main approaches and definitions of social capital relevant to this research are explained; in the second section the state of the art related to the relationship between social capital and Information and Communication Technology is presented; in the third section the relevant concepts related to ICT (Information and Communication Technology) are presented; in the fourth section the concept of EIS (Enterprise Information Systems) is analysed and explained; given the importance of knowledge and knowledge creation for this research, in sections fifth and sixth they are explained. In seventh section the relation between EIS (Enterprise Information Systems) and KC (Knowledge Creation)

is presented. Finally, in the eighth and last section of chapter one, the relation between EIS (Enterprise Information Systems) and KC (Knowledge Creation) is presented.

In the second chapter, the methodological approaches are extensively explained. As they are a critical point to give validity to the research, special attention was put on this part; this chapter is divided in three sections. A brief explanation related to qualitative and quantitative methods is presented. After that, as this research is based on qualitative methods, these are more extensively explained. The main concepts and considerations related to case study selections are also presented. Next, data collection methods are presented and finally data analysis is explained. Also, in the third chapter is presented: an explanation and analysis of the pilot case; the information related to the three cases – Health, Food industry and Software - that form the core of this research; and case description, context, main variables, data obtained, data analysis and conclusions for the each of the cases separately.

In the fourth chapter, we analyse the information from the pilot case.

In the last, fifth chapter, it can be read the final conclusions based on the findings from the three cases, the response to the research question, recommendations, and future research lines.

1. THERETICAL FOUNDATIONS

Social capital has become increasingly important in many research fields. Despite that importance, it has no commonly agreed definition. Although there are various definitions in different contexts and disciplines, social capital is generally understood as the resources embedded in social networks for the mutual benefit of parties within that networks. The main proposition of social capital theory is that social networks have value because they constitute valuable resources that facilitate certain actions of participants within the networks (P. Bourdieu, 1986; Burt, 2001; Coleman, 1990; Portes, 1998; R. Putnam, 2000; Putnam, 1995a; Putnam, 1995b)

1.1 Social Capital

It could be said that the three main approaches to social capital are the ones proposed by Bourdieu, Coleman and Putnam.

The concept of social capital is linked to historical authors, such as Durkheim and his emphasis on group life as an antidote to anomie and self-destruction; Marx and his distinction between an atomized class-in-itself and a mobilized and effective class-for-itself and Weber's economic sociology, among others. However, the modern development of the concept is related to three principal authors – Bourdieu, Coleman, and Putnam. What differentiate the most these three authors in reference to the concept of social capital is the application of different types social phenomena and the application of theories which include different units of analysis. Bourdieu and Coleman focused on individuals or small groups as the units of analysis, meanwhile Putnam centers on big groups, such as cities or entire nations as the unit of analysis. The first two authors set their analysis on the benefits accruing to individuals or families by virtues of their social ties.

One of the first contemporary descriptions of social capital was proposed by Bordieu (1985), who defines the concept as "the aggregate of the actual potential resources which are linked to possession of a durable network of more of less institutionalized relationships of mutual acquaintance or recognition". Social capital does not necessarily involve the investment of economic resources or possession of certain cultural knowledge, in order to establish relations with others. Portes (1998), treats the Bourdieu's concept of social capital as a source of social control, a source of family-mediated benefits, and a source of resources mediated by nonfamily networks. The

last may be seen as the mean which make easer the access to works, market tips or credits. A source of family-mediated benefits correspond to other Bourdieu's category of capital – cultural capital, which refers to child's family background which opens him a door to better education, as well as transmission of certain values, that later can be transformed into other type of capital (e.g. economic).

Coleman centers to the concept of social capital as a source on which base an actor achieves certain benefits. It is perceived the instrumental purpose that motivates an individual to employ the necessary resources in order to reach desired objectives. His actions are goal-oriented. For Coleman thus, social capital is productive. It serves a bonding mechanism which allows integration. Coleman, as many other authors, perceived social capital as a characteristic of communities, meaning that community ties represented advantages for its members. In this case, social capital is understood as a source of social control, which guaranties the personal safety for the members of the community Coleman (1988).

Comparing Bourdieu's and Coleman's approaches to social capital, it is perceived another significant discrepancy in their interpretation. Unlike Bourdieu, Coleman considers that social capital acquires the nature of a public good, meaning that individual direct contributions benefit the entire community. He claims that strong families or communities are funded on the base of strong social relationships between members. From Bourdieu's stand point, social capital represents a scares resource. It reproduces social inequity, although it can increase integration inside some groups. It functions as a mechanism of class reproduction which enables structured inequity. Coleman, however, initially perceives social capital as a potential common interest. "Effective norms that inhibit crime make it possible to walk freely outside at night in a city and enable old persons to leave their houses without fear for their safety" (Coleman, 1988). Danger comes when inside community social relations get weaker and more fragile, it leads to the situation in which social capital lose its attractiveness. The norms and sanctions which were catalyst that inhibited criminal behaviour disappear, as well as the sentiment of safety. As a consequence, social capital stops to be a shared common good.

Differently to Bourdieu and Coleman, who studied social capital of individuals or small groups as a unit of analysis, Putnam centers his analyzes on big groups, such as towns, cities, or entire nations. He perceives social capital as "features of social organizations, such as networks, norms, and trust, that facilitate action and cooperation

for mutual benefit." (Putnam, 1993a). Putnam emphasizes the collective character in his concept of social capital, saying that "Working together is easier in a community blessed with a substantial stock of social capital" (Putnam,1993a). In his book, entitled Bowling Alone: The Collapse and Revival of American Community, Putnam questions contemporary American's sense of community. He claims that as the Americans became wealthier on one side, lost their sense of community on the other side. He illustrates it trough the metaphor of bowling. Bowling was the emblematic sport followed by many Americans, which involved competition in local leagues. What Putnam observes in that today's bowling became solitary game in which individual is bowling alone.

Using the symbol of bowling, Putnam describes decline of the community networks that once led Americans to bowl together. For him, it represents a loss of social capital. In big towns, as well in small suburbs, people stared to modify their conduct. People started to work more in office or watch television alone at their homes. These conducts had negative repercussion on their communities. People, in a way decided to isolate themselves. They, for example chose to dedicate less time to community's activities, such as voluntary associations or socializing with neighbours, friends and family. This alienation from the society, or in this case community, for Putnam meant lost of social bounds and social capital.

The concept of social capital is still today difficult to define. Depending on the scientific social discipline, as well on unity of analysis which for some is individual, and for others elevated to the level of communities, towns or whole countries. Different scientific approaches, like functionalist, critical and rational, intent to offer their definitions of social capital respectively to their theoretical traditions. However, due to the complexity of construct, current concept of social capital is more a combination of the previously mentioned approaches.

For great number of sociologists, political scientists, economists, and organizational theorists, the concept of social capital represents a tool for search of answers in their field of investigations. Thus, the definition of social capital receives information and enriches its contours from different scientific fields. Reaching the clarity of the concept represents a challenge. Nevertheless, numerous theoretical studies in different scientific disciplines were determined to develop a common conceptual framework which detects the cause, benefits, risks and contingences of social capital.

There are numerous definitions of social capital proposed by social scholars. Generally, they seem to be very similar. However, there are some more or less visible differences between them. In the table 1 presented on the next page, Adler & Kwon (2002), highlight differences respectively to external and internal ties that individual has with its community. In the first group authors define social capital as a resource that an actor, as a member of specific habitat, adopted and integrated and which he uses in the pursuit of his goal. Second group considers social capital as resource that reinforces internal relationship between the members of the same group or groups within the collectivity, reinforcing the cohesiveness that facilitates coordination and cooperation for the mutual benefit. Third group is the mixture of the first two, which considers both types of linkages, internal and external. This approach, however, is not very popular among scholars, and it differentiates on the matter of perspective (individual/collective) and unit of analysis.

Table 1 Definitions of social capital

Definitions of Social Capital		
Ext. Vs. Int.	**Authors**	**Definition**
External	**Baker**	"A a resource that actors derive from specific social structures and then use to pursue their interests; it is created by changes in the relationship among actors" (1990: 619).
	Belliveau, O'Reilly & Wade	"an individual's personal network and elite institutional affiliations" (1996: 1572).
	Bourdieu	"the aggregate of the actual or potential resources which are linked to possession of adurable network of more or less institutionalized relationships of mutual acquaintance orrecognition" (1985: 248).
		"made up of social obligations ('connections'), which is convertible, in certain conditions,into economic capital and may be institutionalized in the form of a title of nobility" (1985'243).
	Bourdieu & Wacquant	"the sum of the resources, actual or virtual, that accrue to an individual or a group by virtueof possessing a durable network of more or less institutionalized relationships of mutualacquaintance and recognition" (1992: 119).
	Boxman, De Graaf & Flap	"the number of people who can be expected to provide support and the resources thosepeople have at their disposal" (1991: 52).
	Burt	"friends, colleagues, and more general contacts through whom you receive opportunities touse your financial and human capital" (1992: 9)."the brokerage opportunities in a network" (1997b: 355)
	Knoke	"the process by which social actors create and mobilize their network connections withinand between organizations to gain access to other social actors' resources" (1999: 18).
	Portes	"the ability of actors to secure benefits by virtue of membership in social networks or othersocial structures" (1998: 6).
Internal	**Brehm & Rahn**	"the web of cooperative relationships between citizens that facilitate resolution of collectiveaction problems" (1997: 999)
	Coleman	"Social capital is defined by its function. It is not a single entity, but a variety of differententities having two characteristics' in common: They all consist of some aspect of socialstructure, and they facilitate certain actions of individuals who are within the structure"(1990: 302)
	Fukuyama	"the ability of people to work together for common purposes in groups and organizations"(1995:10)."Social capital can be defined simply as the existence of a certain set of informal values ornorms shared among members of a group that permit cooperation among them" (1997).
	Inglehart	"a culture of trust and tolerance, in which extensive networks of voluntary associationsemerge" (1997: 188)
	Portes & Sensenbrenner	"those expectations for action within a collectivity that affect the economic goals and goal-seeking behavior of its members, even if these expectations are not oriented toward theeconomic sphere" (1993: 1323).
	Putnam	"features of social organization such as networks, norms, and social trust that facilitatecoordination and cooperation for mutual benefit" (1995: 67)
	Thomas	"those voluntary means and processes developed within civil society which promotedevelopment for the collective whole" (1996: 11).
Both	**Loury**	"naturally occurring social relationships among persons which promote or assist theacquisition of skills and traits valued in the marketplace... an asset which may be assignificant as financial bequests in accounting for the maintenance of inequality in oursociety" (1992: 100).
	Nahapiet & Ghoshal	"the sum of the actual and potential resources embedded within, available through, andderived from the network of relationships possessed by an individual or social unit. Socialcapital thus comprises both the network and the assets that may be mobilized throughthat network" (1998: 243).
	Pennar	"the web of social relationships that influences individual behavior and thereby affectseconomic growth" (1997: 154).
	Schiff	"the set of elements of the social structure that affects relations among people and areinputs or arguments of the production and/or utility function" (1992: 160)
	Woolcock	"the information, trust, and norms of reciprocity inhering in one's social networks" (1998: 153).

Source: Adler, Paul S.Kwon, Seok-Woo (2002), *Social capital: Prospects for a new concept*

Since people‘s relationships matter greatly to themselves as individuals and as members of communities, social capital has been investigated and found an important element in many aspects of life like: the development of human capital (Coleman, 1988; Giorgas, 2000), quality of life (Kennelly, O’Shea, & Garvey, 2003; Spence & Schmidpeter, 2003; Uslaner & Dekker, 2001), health (Liukkonen, Virtanen, Kivimäki, Pentti, & Vahtera, 2004; Rose, 2000), economic performance (Grootaert, Narayan, Jones & Woolcock, 2004; Schuller, Baron, & Field, 2000), and innovation diffusion (Fountain, 1997).

As we have seen before, there are many definitions of social capital and many words have been used to make reference to the term which often leads to great confusion. Terms like: social energy, community spirit, social bonds, civic virtue, community networks, social ozone, extended friendships, community life, social resources, informal and formal networks, good neighbourliness and social glue have been used to make reference to social capital.

For Woolcock, the concept of social capital "…risks trying to explain too much with too little [and] is being adopted indiscriminately, adapted uncritically, and applied imprecisely…" (Lynch, Davey, & Kaplan, 2000). To avoid this problem, we will establish the definitions and main authors that we are going to use in our research.

The central proposition of social capital theory is that social networks have value because they constitute valuable resources that facilitate certain actions of participants within the networks (P. Bourdieu, 1986; Burt, 2001; Coleman, 1990; Portes, 1998; R. Putnam, 2000; R. D Putnam, 1995) This proposition is the key element for our research and the motive why we suggest that social capital has an important paper in order to improve the benefits of using Information and Communication Technologies. We consider that social networks play an important role in the process of knowledge creation, in the organizational structure and directly in the use of ICT, because they facilitate certain key actions for every one of these variables.

Although we mentioned the central proposition of SC, we can say that the definitions can be separated into two camps: one for individual social capital (Bourdieu, 1986 and Coleman 1990), and the other for collective social capital (Putnam 1993, 1995a, 2000; Woolcock & Naryyan 2000; and Portes 1998)..

1.1.1 Individual Social Capital

Some theories, such as Bourdieu (1986) and Coleman (1990) regard social capital as the resources generated by an individual‘s social network for his or her mutual benefit as a member of the network.

Other theories of social capital at the individual level include Lin‘s network theory of social capital (Lin 2001a; 2001b), Burt‘s theory of structural holes and network closure as social capital (Burt 2001), and Portes‘s theory who considers social capital as the ability of actors to secure benefits by virtue of membership in social networks or other social structures (Portes 1998). They consider individuals or small groups the unit of analysis and examine the benefits that individuals obtain from their relationships with others.

For Bourdieu(1986), social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition. Social capital is made up of social obligations or connections, which can be convertible, in certain conditions, into economic capital and may be institutionalized in the form of a title of nobility.

Bourdieu (1986) emphasizes that capital is accumulated labor, and he divides capital into three fundamental classes: economic, cultural, and social capital. Economic capital is immediately and directly convertible into money and may be institutionalized in the form of property right; cultural capital may be institutionalized in the form of educational qualification; and social capital is an individual feature.

For Coleman (1990), social capital is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: They all consist of some aspect of social structure, and they facilitate certain actions of individuals who are within the structure. According to Coleman, social capital can take on forms such as obligations and expectations, information potential, and norms and effective sanctions. His definition is important because it implies a shift of understanding social capital from the individual level to the collective level (Adam & Roncevic 2003).

For Burt (2001), social capital refers to friends, colleagues, and more general contacts through which you receive opportunities to use your financial and human capital.

The measurement of individual social capital often focuses on variables indicating the position of an individual inside a social network (Adam and Roncevic 2003). Some of

the measurement instruments include, among others, the Name Generator/Interpreter, the Position Generator, and the Resource Generator (Van der Gaag and Snijders 2003; 2004; Van der Gaag et al., 2004). The Name Generator/Interpreter requires the respondent to identify the names of people with whom he or she can talk about personal matters. The Position Generator measures access through network members to certain occupations that represent social resource collection based on job prestige. The Resource Generator asks about access to a fixed list of specific social resources in several different domains of life.

1.1.2 Collective Social Capital

Some other theories such as those proposed by Putnam (1993; 1995a; b; 2000), Woolcock and Naryyan (2000), consider social capital as both individual‘s social networks and their moral attitudes, or social norms, which contribute to the common good of a community or even a nation. This approach is referred to as collective social capital (Portes 2000).

For Putman (1995), Social Capital refers to features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit.

Putman (2000) argues that the core idea of social capital theory is that social networks have value. He also gives emphasize to the character of social capital as a community level resource and defines social capital as connections among individuals, social networks and the norms of reciprocity and trustworthiness that arise from them. For Putnam: (1) social networks and social norms are important to societal cooperation, coordination and collaboration; (2) social capital has important consequences for democracy; and (3) social capital has declined in post-war America.

From our point of view, the definition of Putman is interesting because he considers that social networks are important for cooperation, coordination and collaboration which is a way to define integration, and we consider that this will impact on the “knowledge creation process”, “organizational structure” and definitely to the “use of Information and Communication Technologies”.

As a set of resources rooted in relationships, collective social capital has many different attributes and thus requires multidimensional measurement (Grootaert et al. 2003; O'Brien et al. 2004). The most used and agreed dimensions of social capital in the

literature, are social networks, trust, and norms of reciprocity. A social network concerns the extent of an individual‘s participation in various types of social organizations and informal networks. It also concerns the social support that one can obtain (Grootaert et al., 2003).

Trust is defined as the level of confidence that people have that others will act as they say or are expected to act or that what they say is reliable. It is the bedrock of most personal relationships, and facilitates various day to day interactions (Productivity Commission 2003).

Norms of reciprocity refers to shared understandings, informal rules, and conventions on continuing relationships of exchange that are at any given time, unrequited or imbalanced. It involves mutual expectations that a benefit granted now should be repaid in the future (Putnam 1993). The notion that the norm of reciprocity is related to social capital is well documented as an important element that facilitates the way in which interactions are structured among group members (Putnam 2000; van Schaik 2002).

Trust and Norms of reciprocity are key elements in our proposed model. Also, we use the concept of social capital because it works with informal networks that in our case are very important, given that they feed the knowledge creation inside the organizations (Nonaka & Toyama 2003), have an important impact on the organizational structure, and affect the use and optimization of ICT systems (Kenneth Frank and Zhao 2004).

In our research, we decided to analyze the impact of both types of Social capital (Individual and collective) on Information Technology benefits.

1.1.3 The role of social capital in contemporary societies

For Adam et. al. (2002), it is important to analyze which aspects and conceptualizations of social capital provide the best explanations of (post) modern societies. Based on their previous works, Putman´s critical analysis, and others work like Fukuyama (1995), Woolcock and Narayan, (2000); they suggest the next aspects and conceptualizations of social capital:

Social capital as catalyst for disseminating human and intellectual capital.

The possession of knowledge and competence –even supposing the existence of economic capital- is not sufficient for the optimal realization of certain developmental goals. Mechanisms of transfer and intermediation are also necessary: a typical case is the transfer of knowledge and innovation from the academic sphere to the industrial or policy making spheres so that accumulated human capital may be efficiently and appropriately applied. Human capital can be "dead capital" it is put into circulation with the aid of mechanisms of recombination and reconfiguration so that it may be made useful for technological application or for the solution of social problems (Gibson, 1994). Social capital is in this context may be considered to be an asset that can perform this role. The existence and maintenance of different networks on the basis of generalized reciprocity, trust and readiness to co-operate are a precondition for the transfer and dissemination of knowledge and innovations (Guiddens, 2000).

Social capital as the basis for greater levels of synergy and co-ordination.

According to some authors, synergy is linked to complementarity and embbededness (Evans, 1996); investigations conducted by the World Bank emphasize the linkages between government and civil society or the formation of public-private partnership (Woolcock and Narayan, 2000). This conceptualization may also be defined as a discreet re-integration of individual and collective projects and resources into more complex frameworks of strategic steering. Of course this steering is not hierarchical in nature, but can occur only in the form of contextual steering on the basis of "intermediary negotiation systems" (Mayntz, 1993; Wilke, 1995). Here once again the linking and bridging functions of social capital come to the fore. In settings where this kind of social capital is absent, disturbances in co-ordination and consequently sub optimal institutional efficiency are the most probable outcomes.

Social capital as a lubricant of network (project) organizations.

More about this type of organizations can be found in Kanter and Eccles, 1990. One of the problems of transition (post socialist) societies has to do with the domination of bureaucratic organizations, with the insufficient of ad hoc organizational forms (Mintzberg, 1989). Bureaucratic types of organization are maintained even in those areas where different forms of organization and management should already have been developed. The higher level of development presupposes project-based organizations, which are less hierarchical and more flexible and require more demanding form of leadership and communication. In this case, "Spontaneous sociability" (Fukuyama, 1995) is important, along with specific know-how as well as a capacity for empathy and co-operation. In those settings where there is too little social capital (as in the case of transition countries), these forms of organization – including association-based types of NGOs – evolve with great difficulty. The same is true for establishing team groups in different areas, from industry to research teams at universities and institutes.

Social capital as a facilitator of intermediary institutions

This aspect is linked to project – and association-based organizations though it also has broader implications. Essentially it concerns relationships and networks within civil society – an aspect which Putman refers to as "horizontal networks of civic engagement". This deals with the nature of structures that occupy the sphere between individuals or small life-worlds and big instrumental institutions (Berger and Luckmann, 1995). In other words, here we can have transparent and (in principle) democratic formations of interest groups or, on the other hand, groups in which clan-like forms of clientilistic and rent-seeking networks (in extreme cases the Mafia and organized crime) dominate. This aspect may have direct repercussions on developmental dynamics. In the latter case, malign social constellations emerge (these can be observed in certain settings in Latin America, the Balkans, Russia and southern Italy) which have destructive effects on trust and co-operation (Gambetta, 1989). In this manner a vicious circle may develop, leading to stagnation and path dependency.

These conceptualizations are neither new nor unique. Indeed, they can be extracted from some of the aforementioned approaches to the study of social capital. Hower, most of these approaches assume concealed or overtly exclusivist attitudes towards others. This can be viable in the case of a very focused micro-level approach, but in order to study complex processes of societal transformation underway in countries of

eastern Europe or differences in developmental performance of more developed societies, a more holistic and comprehensive approach – one in line with the aforementioned conceptualization – is required.

It should be added that social capital in Eastern Europe remains curiously under-researched. Numerous studies focus on the implications of social capital in developed countries, and due to the interest of the World Bank significant effort has also been devoted to third-World countries, but we are still waiting for a substantial systematic contribution to the study of social capital in post socialist countries, although it is perhaps the crucial determinant of differences in developmental performance between a group of more advanced post socialist countries of East-Central Europe and core countries of the European Union (Adam et. al., 2002). (Adam and Roncevic, 2003)

1.2 Social capital and ICT

While the public choice theory takes into consideration the relation between internal and external organization, Neo-Taylorism focuses on internal organization of

Currently, great efforts are being made to explore the influence of ICT on society. At the same time, some IS researchers have increasingly become aware of the important role of social capital in technology development and knowledge sharing processes (Fountain 1997; Riemer 2004; Syrjanen and Kuutti 2004). To analyze the existing studies of social capital and ICT (Yang, Heejin and Sherah, 2009), propose a two dimensional framework to map those studies: (a) unit of analysis and (b) the role of social capital in research design.

The unit of social capital analysis is concerned with, whether the social capital concept is defined as an asset of an individual or a feature of a community.

The study of Markus and Robey (1988), in addressing IT and organizational change, presents several ways of understanding the causal structure in theory and research. According to them, technology plays different roles in relation to organizational change as: an independent variable that causes organizational change (named the technological imperative); a dependent variable caused by the organization‘s information processing needs and managers‘ choices about how to satisfy the needs (the organizational imperative); or as one of many factors in an emergent process of change resulting from the unpredictable interaction between technology and its users (the emergent perspective).

Guided by the analysis of Markus and Robey, we analyze the relationships between social capital and ICT according to the role of social capital. The role of social capital depends on whether social capital is a dependent variable or an independent variable.

Some studies focus on the impacts of ICT on building social capital and maintaining it (dependent variable), whereas others focus on the effects of social capital (independent variable) on the development and use of ICT which is our area of interest.

1.2.1 Social Capital as a Dependent Variable

Research using social capital as a dependent variable explores the role of ICT in social capital building, recreation, and maintenance.

Impacts of ICT on social capital at both the individual and collective levels are discussed here. However, the difference between individual and collective social capital is not always clear. Shah, Kwak, and Holbert [2001], for example, claim that they explore the relationship between Internet use and the individual level production of social capital. Nevertheless, their study is based mainly on Putman‘s social capital theory, which in turn is focused on social capital at the collective level. Moreover, the authors employ Internet use to predict civic engagement, interpersonal trust, and life contentment, which are more related to the welfare of a community than to an individual‘s personal benefits. In this paper, we group reviewed studies based on (a) the theoretical foundation of an article – that is, whether it is based on the theory of individual social capital or that of collective social capital, and (b) the immediate beneficiary – who would benefit immediately, the community or individuals. For that reason, Shah et al.,[2001] is placed into the changing social capital category.

1.2.1.3 Connecting Social Capital

Research that examines the role of ICT in building individual social capital is included in this category. Some studies illustrate that the spread of ICT creates networking infrastructure, which encourages the formation of social capital [Clark 2003; Pierce and Lovrich Jr. 2003]. Pierce and Lovrich Jr. [2003] examine the relationship between Internet use and social capital in forming social and personal trust. Surveys among citizens of Minneapolis and Atlanta show that Internet use is associated with higher levels of trust, even when controlling for the personal characteristics of individuals; i.e. race, income, and education. In a study of a community technology centre (CTC) in one of Denver‘s disadvantaged communities, Clark [2003] seeks to find out how CTC practices address the digital divide and to examine the policy implications of those practices. Its main findings – apart from discrepancies between the goals of the center‘s supporters and policymakers on the one hand and its actual use on the other – suggest a potential for CTC to enhance users‘ social capital. By using Oldenburg‘s concept of third places, the author emphasizes the positive role of CTC for drawing young people together and thereby helping them build social networks. These networks, which comprise social capital, facilitate not only activities such as —finding

employment‖ and ―locating housing,‖ but also individual ―political involvement‖ and ―civic engagement.‖ Notably, the Internet‘s potential for increasing social capital, according to Clark [2003], may lie less in the technology itself than in the public locations that enable its use among disadvantaged communities.

In recent years, the rapid development of social network services (SNSs) has increasingly attracted researcher’s attention. The relationship between the use of SNSs and social capital has also been investigated [Ellison et al.,2007]. SNSs focus on building online communities of people who share or are interested in exploring the same interests and/or activities. Sites that deliver such services, such as MySpace, Facebook, LinkedIn, and CyWorld, allow individuals to present themselves, articulate their social networks, and establish or maintain connections with others. In analyzing the relationship between the use of Facebook and the formation and maintenance of social capital, Ellison et al., [2007] discovers that there is a strong association between the two. Furthermore, Facebook use may also provide benefits for users with low self-esteem and low life satisfaction. Technology-mediated interactions, such as the use of social network sites, may provide users with an opportunity for the creation of new forms of social capital, called ―virtual‖ social capital that opposes but also complements ―real‖ social capital developed offline [Alessandrini 2006].

Some studies, however, argue that ICT may also erode social capital [Loch and Conger 1996]. Loch and Conger [1996], for example, argue that ICT can cause de-individuation. They describe de-individuation as ―a feeling of being estranged or separated from others that can lead to behavior violating established norms of appropriateness‖ [p.76] and claim that people experience de-individuation when interacting with people via a computer. At the same time, some researchers find that the differences in ICT use may lead to different results. ICT use for information and/or communication usually enhances cooperation and collective action, which may be beneficial to social capital building, while using such services for entertainment may lead people to increased disconnection from the real world [Rheingold 2002; Srivastrva 2005].

1.2.1.4 Changing Social Capital

Most studies that use both ICT and social capital as keywords focus on the impacts of ICT use on collective social capital. Early studies in this category concentrate on the effects of ICT – mainly TV and the Internet – on social capital, in response to Putnam‘s argument. Findings from these studies only partly support Putnam‘s view that television in America has contributed toward the erosion of social capital and civic engagement [London 1997; Norris 1996; 2003; Shah et al., 2001]. Norris [1996], for example, by analyzing data from the American Citizen Participation Study in 1990 [Verba et al., 1995 in Norris 1996], shows that while the amount of time spent in front of the television does seem to be negatively related to political participation, other evidence about what American viewers watch suggests that watching news and, in particular, current affairs programs does not seem to be damaging to the democratic health of society and may even prove beneficial. Recent studies are motivated mostly by three considerations: the importance of social capital for economic development, social development, and the democratic process. Studies in the former areas are concerned with the effects of ICT – typically the Internet and community networks – on social capital in building strong and cohesive communities, while those in the latter consider the role of ICT in building social capital for the development of democracy.

Some government agencies and international organizations emphasize that it is necessary to investigate the role of ICT in the building of social capital because of its benefits, such as the reduced need for personal security and improved workplace efficiency [Information Economy Division 2005]. Studies for economic and social development examine the dynamic role of ICT and its uncertain consequences for both individuals and communities. It is expected that ICT can enhance people‘s connectivity, which potentially acts as a catalyst for greater social interaction and community participation [Department of Communication Information Technology and the Arts 2005; Field 2003].

Some positive outcomes have been reported about the role of ICT in the building of social capital for community development. Hampton and Wellman‘s study conducted in Netville, Toronto, Canada is among the most frequently quoted. It reveals the positive social impacts of Internet use on relationships within neighbourhoods [Hampton 2001; Hampton and Wellman 2003]. Contrary to predictions that Internet use would encourage social isolation, the Netville experiment showed that Internet use resulted in greater civic involvement and neighbourly contact. In fact, wired residents were two to

three times more likely to recognize and talk with their neighbours than were non-wired residents. Moreover, the residents of a networked neighbourhood were able to organize and mobilize collectively, despite the weak ties among them. These findings indicate that communication networks in Netville promoted the building of social capital.

Social researchers have also attempted to identify the impact of the information technology revolution on democratic governance [Han 2002; Putnam 2002]. Han [2002], for instance, demonstrates that Netizen activities in cyberspace have contributed to the substantial development of Korea‘s democracy. This theory is supported by a series of social and political movements from 2000 to 2002. He argues that Korea‘s experience of Internet based social capital mobilization confirms the power of newly created cyberspace as a public sphere in the Information Age. He also recognizes that social capital evolution, ICT diffusion, and democratic development are all bound by a country‘s historical and cultural specifics.

1.2.2 Social Capital as an Independent Variable

Studies treating social capital as an independent variable in ICT related research usually examine the effects of social capital on the development and use of ICT. Such studies are grouped into two categories: (a) influencing social capital and (b) enabling social capital. These two categories analyze, respectively, the effects of individual social capital and collective social capital on ICT.

1.2.2.3 Influencing Social Capital

Studies in this group regard social capital as the resources or attributes of an individual that can affect his/her acceptance, involvement in diffusion, and usage of ICT.

Although only a few studies explicitly use the term —social capital and define it at the individual level, some have noticed the influence of social factors – often defined as subjective or social norms – on ICT (Loch and Conger 1996; Straub et al. 1997; Venkatesh and Davis 2000; Venkatesh et al. 2003). The influence of social factors is defined, in the study of technology acceptance, as the degree to which an individual perceives that others expect him or her to adopt or continue to use information technology (Venkatesh et al. 2003). This concept is closely related to the communication channel aspects of Innovation Diffusion Theory (Rogers 2003) and is found to be an important factor for potential users in adopting a technology, especially in regard to mandatory usage settings (Venkatesh et al.2003).

These studies indicate that individual social capital, which mainly involves an individual‘s social networks and the resources generated by those networks, may have positive effects for ICT acceptance and diffusion. It may also provide a context for the use of some technologies, such as the Internet or mobile phones, for communication.

1.2.2.4 Enabling Social Capital

In this category, studies define social capital as a feature of communities and examine the effect of social capital on ICT adoption, acceptance, and use in communities. Two types of studies are identified. In one group, the effects of collective social capital on ICT are discussed directly, and the term “social capital” is used explicitly. In the other, the influence of social capital is implicit, and some or all elements of collective social capital are investigated. These elements include social networks and social norms, such as trust and reciprocity, in a community.

Some studies demonstrate that a high level of already established social capital, such as pre-existing, strong, non electronic networks and community commitment, is a factor for success in establishing electronic based networks (Borgida et al., 2002; Fukuyama 1995). Borgida et al., (2002) examine the role of social capital in addressing the digital divide by conducting a comparative case study of two rural Minnesota communities, each with its own community electronic network. They find that the community with a higher level of social capital had a more positive attitude towards the technological change.

Fountain (1997) argues that social capital is a necessary, although not sufficient, enabler of effective partnerships for technology innovation and suggests that it is necessary to draw a distinction between social capital and so called informational capital. The latter emphasizes the value of shared information. Although access to information, notably through the Internet, provides a variety of opportunities, informational capital is not a replacement for social capital. Social capital increases the ability to build and use informational capital because trustful relationships facilitate information flows and make information more meaningful. Fountain claims that the ability to collaborate both within and among firms and other organizations appears to be a necessary condition for firms to take advantage of new technologies.

The relationship between social capital and ICT is very important for our study. As we mentioned above, social capital could be a key variable in order to foster that people in

SME´s had a positive attitude towards ICT usage. Also, Social Capital could play an important role in the information flow of the company and in the knowledge Creation Process.

1.3 Towards the Definition of Information and Communication technology

The objective of this section is to clarify the concepts and scope of the term "Information and communication technology". Before trying to provide a suitable definition of Information and communication technology that will be used in this research, it is necessary to clarify the basic concepts of information, communication and technology, separately, and later as a whole.

1.3.1 Information

Information is a commonly used term in our daily lives. In recent years because of technology, mainly internet and computers, the term information has become very popular. In order to understand the term information it is necessary to define what data is and how it is related to the term "information". According to Tecuci (2016) data are uninterpreted signals, raw observations, measurements.

For Bakopoulos (1985), a set of full information should encompass a complete description of the state of the relevant part of the world; however, as our world is too complex, we need to make a limited description, which in most cases is not good enough. In order to make communication easier we need certain shared models that let us share correctly our description of the world; the role of the models is to predetermine a big part of our view, using it we only have to specify a small set of parameters, so we do not have to make a tremendously extensive description of the context.

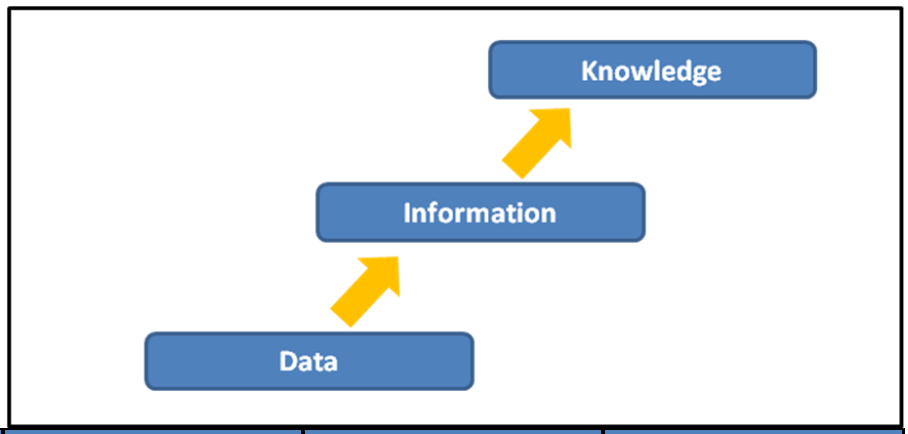
The Oxford dictionary defines information as: "Facts provided or learned about something or someone". For **Wiig (1999)**, information is data equipped with meaning provided by a certain context. The concept of information has evolved through time; however, one common characteristic has been its role in describing the state of the world, past, present and future.

At this point we can clearly distinguish the difference between data and information. Data by itself does not carry information, because as we had said before, information should give us facts about something or someone. Data has no value unless it is put in

context, which in other words means that a specific shared model for the situation must be specified. So, data put in context becomes information because it gives facts about something or someone in a specific context.

Table 2 Definitions of data, information, knowledge

Source: Elaborated by the author based on Stenmark (2002)



Author \ CONCEPT	DATA	INFORMATION	KNOWLEDGE
Wiig	-	Facts organised to describe a situation or condition / data equipped with meaning provided by a certain context	Truths and beliefs, perspectives and concepts, judgements and expectations, methodologies and know how
Nonaka and Takeuchi	-	A flow of meaningful messages	Commitments and beliefs created from these messages
Spek and Spijkervet	Not yet interpreted symbols	Data with meaning	The ability to asing meaning
Davenport	Simple observations	Data with relevance and purpose	Valuable information from the human mind
Davenport and Prusak	A set of descrete facts	A message meant to change the receiver's perception	Experiences, values, insights, and contextual information
Quigley and Debons	Text that does not answer questions to a particular problem	Text that answers the questions who, when, what, or where	Text that answers the questions why and how
Choo et al.	Facts and messages	Data vested with meaning	Justified, true beliefs
Tecuci	Uninterpreted signals, raw observations, measurements.		

1.3.2 Information Technology

Perrow [19] defined technology as systems for getting the work done. In that context, technology is a structural variable, describing the way organizational resources are managed. Economics have long characterized these resources in terms of the factors of production they employ (capital or labour), and more recently in terms of the function they perform (they store, transport or transform raw or processed materials), and the structure of the system, referred to as the type of technology. Thompson [25] identified three basic types of technology corresponding to generic says to combine resources during system design: sequential (single input, single output components), intensive (multiple input, single output components), and mediating (multiple input, multiple output components). Mason [15] completed this classification by adding one more category, extensive technology (single input, multiple output).

Following this line of thinking, information has been treated as both a factor of production and as an input to the production process, from a macroeconomic [12], and a microeconomic [24] point of view. This corresponds to what can be considered as the traditional definition of information technology:

Information technology is the set of non-human resources dedicated to the storage, processing and communication of information, and the way in which these resources are organized into a system capable of performing a set of tasks.

This definition, by treating information similarly to other inputs in the production process and information technology as just another form of capital investment, employs a view of information analogous to Shannon's paradigm. For example no distinction is made between models and data, and information technology is not differentiated from other process technologies except to the extent that it is manipulating a different resource (information). This perspective has been implicit in most research with a computer science, industrial engineering, or operations research orientation. It may correspond well enough to traditional transaction-processing systems but it would probably prove inadequate to study systems with more complex organizational impacts, such as the several applications that constitute end-user computing.

We believe that the concept of bounded rationality provides an important link between organizational and behavioural theories and information technology. At the individual level, rationality can be described as the reaction of an individual to information about changes in the state of the world demonstrating a set of goals, in correspondence to

Wiener's cybernetic paradigm[27]. Bounded rationality refers to neurophysiological limits on memory, computational, and communication capacities of an individual[22,23]. It is demonstrated by limits on the complexity and size of problems that can be solved by humans. Both concepts of rationality and bounded rationality can be extended to the organizational level, and bounded rationality has been an important concept in organizational design[8,10,14,28].

Building on Perrow's concept of technology and taking into consideration the organizational issues discussed above we are led to a definition of information technology that is behaviourally and organizationally motivated and spans both approaches. First, information can be viewed as a factor of production, and hence information technology assumes its traditional role of a process technology: the utilization of resources devoted to handling and processing of information. Second, information is an important component of an organization's environment and is intimately related to organizational rationality. Thus information technology can have a significant impact on the bounds of organizational rationality. The following definition of information technology captures both perspectives:

Information technology encompasses systems that affect the bounds in the rationality of organizational units and the limitations of their information related process technology. These bounds and limitations may be either internally imposed (because of human neurophysiological limitations) or external (because of technological design limitations).

We have proposed here a definition of information technology that recognizes its dual role: that of an organizational technology affecting the bounds of organizational rationality, and the of a process technology, devoted to the handling and processing of information. We believe that many past problems in information systems research were causes by attempting to address issues related to organizational rationality while adopting a perspective limited to a process view of information technology.

Information technology is not an end in itself; it is used instead as a means to achieve organizational goals. Thus is becomes significant only in the context of specific organizational settings. Depending on the relevant application scenarios, other reference disciplines become appropriate. For example, to understand the potential of information technology as a strategic business factor, corporate strategy and industrial economics come in as relevant disciplines [4]. These disciplines offer generally

acceptable reference theories, e.g., a theory of the elements of corporate strategy, or of the forces creating competitive advantage.

Information technology (IT) is defined by the Information Technology Association of America (ITAA) as the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware. It is extended to include an increasingly important aspect of computing, that is, communication.

1.3.3 Information and communication technology

Another very popular term nowadays is technology, which is defined by the Oxford dictionary as “the application of scientific knowledge for practical purposes, especially in industry” or “machinery and devices developed from scientific knowledge”. For Perrow (1967) technology is defined as systems for getting the work done.

The main idea of the previous definitions is the application of scientific knowledge to create machinery, devices or systems that be useful for practical purposes, for getting the work done.

After having defined the terms Information and Technology, we have the basis to understand the concept of information technology. Bakopoulos (1985) defines “Information technology” as the set of non-human resources dedicated to the storage, processing and communication of information, and the way in which these resources are organized into a system capable of performing a set of tasks.

According to the author, this definition treats information like other inputs in the production process, and information technology as a factor of production, this implies a view of information similar to Shannon's paradigm. (See figure 6).

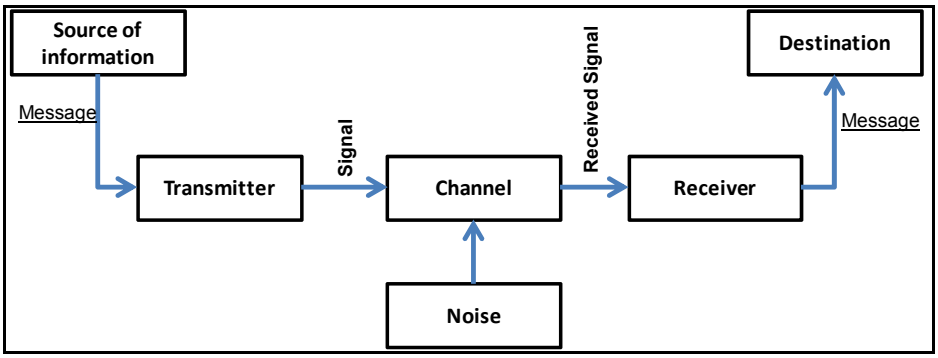


Figura 9 Shannon´s model of communication

Elaborated by the author based on Wolf, 2005

In Shannon´s model, the input is information, which is then transmitted through a channel to a receiver that delivers the information to the final destination. In this case as Bakopoulos comments, information is an input and the transmitter, the channel and the receiver will be the factors of production.

Information technology has a very important role in organizations, because of its impact on two concepts: rationality and bounded rationality.

Rationality is defined by the oxford dictionary as "the quality of being based on or in accordance with reason or logic". According to Bakopoulos (985), at the individual level, rationality is the reaction of an individual that has a set of goals to achieve, to information related to changes in the state of the world. This corresponds to Wiener's cybernetic paradigm which says that to achieve goals, it is necessary to have information (communication) between the actor and the environment, and act as needed in order to achieve them. (Wiener, 1948) [3].

For Simon (1947), Bounded rationality is the limited attentional capability of humans resulting in their bounded capacity to be rational. Also, bounded rationality refers to neurophysiological limits on memory, computational, and communication capacities of an individual. (Simon, 1955,1956).

According to Bakopoulos, (1985) rationality and bounded rationality can be extended to the organizational level because, amongst other reasons, bounded rationality has an important

[3] http://www.pangaro.com/definition-cybernetics.html

role in organizational design. (Ciert, 1963; Galbraith, 1977; March, James and Simon, 1958; Williamson, 1975).

Extending the concepts of rationality and bounded rationality, Bakopoulos, (1985) proposes a more complete definition of Information technology:

"Information technology encompasses systems that affect the bounds in the rationality of organizational units and the limitations of their information related process technology. These bounds and limitations may be either internally imposed (because of human neurophysiological limitations) or external (because of technological design limitations."

This definition clarifies that information technology, on one hand affects the bounded rationality of organizations and on the other hand, it also affects the process technology[4] used to handle and process information.

It is very important to mention that Information technology is not an end in itself; it is used to achieve organizational goals.

Information technology (IT) is defined by the Information Technology Association of America (ITAA) as the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware. It is extended to include an increasingly important aspect of computing, that is, communication.

1.3.4 Information and communication technology

When Information Technology and Communication are combined, it is often referred to as Information and Communications Technology (ICT). IT and ICT are often used interchangeably.

Information and communications technology (ICT) is an extended term for information technology (IT) which stresses the role of unified communications[5] and the integration

[4] Procedures, equipment, and software designed to collect and process information according to pre-defined decision making methods, models, or rules, and to present it in a form tailored to the needs of the user or recipient.

of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information[6].

An ICT system is composed of hardware, software, data and the people who use it. Nowadays, it generally includes communications technology, such as Internet. ICT and computers are not the same thing. Computers are the hardware that is often part of an ICT system. ICT is not just about computers but about how, why and when people use them. It is the power of computers and communications that has allowed ICT systems to become so important. Like any piece of equipment, the important thing about it is what it lets us do.

Information and Communication Technologies are used in fields such as: communications, medicine, farming, services, etc. Nowadays. ICT systems are used in almost any activity and they are a very important tool, however we cannot forget that ICT are just tools and that these systems are based one way or another on people, organizations, relationships, etc. We support that in order to get a benefit from ICT, it is very important to understand and strengthen the role of individuals in the organization. There are three main types of ICT systems:

- Information systems. This type of ICT system is focused on managing data and information.

- Control systems. These ICT systems mainly control machines. They use input, process and output, but the output may be moving machines, robots, etc. rather than information.

- Communications systems. The output of these ICT systems is the successful transport of data from one place to another.

For our research we will analyse the impact of Social Capital on Information and Communication Technologies, it includes the three kinds of systems mentioned above.

It means that we consider that social capital could have an impact on any of the three information systems mentioned above.

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[5] Murray, James (2011-12-18). "Cloud network architecture and ICT - Modern Network Architecture". ITKnowledgeExchange. TechTarget. Retrieved 2013-08-18.

[6] Information and Communication Technology from". FOLDOC. 2008-09-19.

1.4 Enterprise Information Systems

Information Systems is a large umbrella referring to systems designed to create, store, manipulate, or disseminate information. The term Information systems has been around a lot longer than the computer or the term information technology. These days the two are sometimes thought to be synonymous, but that, in most cases, is a misconception.

Cragg (2008) defines Enterprise Systems (ES) as large-scale organizational systems built around packaged enterprise system software. Enterprise System Software (ESS) has the following characteristics: a) is a set of packaged application software modules with an integrated architecture, which can be used by organizations as their primary engine for integrating data, processes and information technology, in real time, across internal and external value chains; b) contains deep knowledge of business practices accumulated from vendor implementations in a wide range of client organizations; c) is a generic 'semifinished' product with tables and parameters that user organizations and their implementation partners must configure, customize and integrate with other computer based information systems to meet their business needs. For Cragg (2008) ESS includes enterprise resource planning (ERP), customer relationship management (CRM), supply chain management (SCM), product life cycle management (PLM) and eProcurement software.

We consider that EIS are one kind of Information Technology and also part of Information and Communication Technology. We consider the definition of Cragg (2008) of ESS as equivalent to Enterprise Information Systems (EIS).

As a resume we have:

- Information Technology
- Information and communication technology
- Information systems
- Enterprise information systems
- Entreprise Software systems

The Health Information System (HIS) consists of a variety of available software applications including patient´s medical record system, pharmacy management, accounting, radiology, nursing and lab systems and uses certain standards for data

exchange at the network level (Samy et al. 2009; Robertson & Severaid, 2008). According to some researchers, HIS play an important role in improving the delivery of health care services (Gartner et. al. 2017).

1.5 Knowledge

One of the fundamental topics of this research is knowledge creation, in order to understand this concept, it is necessary to clarify the definition of knowledge. Traditionally knowledge has been related to status and power (in the past people that were able to read, people that knew how to heal other people, priests, teachers, etc.). Today knowledge has become increasingly important in a variety of research fields such as knowledge engineering (R. Studer et al., 1998, G. Tecuci et al., 2016), economy, sociology, philosophy, innovation, marketing, technology, etc. As an example of the importance of the concept, a search on "Google scholar" database gives us over 5 million results. However it is necessary to clarify the concept in order to avoid confusion with other terms as data or information.

Epistemology is the study of knowledge, what we believe it may be, and how we obtain it. (Tecuci, 2016).

There are many definitions of knowledge. The Merriam-Webster dictionary defines knowledge as the fact or condition of knowing something with familiarity gained through experience or association. For **Wiig (1999)** knowledge is a set of truths and beliefs, perspectives and concepts, judgments and expectations, methodologies and know-how.

For Tecuci (2016) knowledge can be defined as justified true belief. The person A knows that event B occurred if:

- Event B occur [true]
- A got nondefective evidence that B occurred [justified]
- A belived this evidence [Belief]

In the area of organization and information systems, Davenport and Prusak (1998) define knowledge as "a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the knowers".

Also they mention that “in organisations, it often becomes embedded not only in documents or repositories, but also in organisational routines, processes, practices, and norms”. The knower uses the experience, values, contextual information and expert insight that he receives, to create a framework that helps him to evaluate and incorporate new experiences and information which is originated and applied in his own mind.

Besides Davenport and Prusak, there are many other definitions and classifications of knowledge (Cyert and March, 1992; Choo, 1998; Zack, 1998; Alavi and Leidner, 2001; Nonaka, 1994,4; Nonaka and Takeushi, 1995).

In his Organizational Knowledge Creation Theory, Nonaka defined knowledge in three complementary parts: justified true belief, actuality of skillful action and/or potentiality of defining a situation to permit action, explicit – tacit.

- In the first part, he considers that knowledge is a *justified true belief.* Individuals justify the truthfulness of their beliefs based on their interactions with the environment (Nonaka, 1994; Nonaka et al 2006).

- In the second part, he considers knowledge as the *actuality of skillful action*, because people get knowledge through the performance of tasks, so knowledge is acquired through action and practice. Also, he considers that knowledge can be “the potentiality of defining a situation so as to permit (skillful) action (Stehr 1992, 1994). Knowledge allows humans to define, prepare, shape, and learn to solve a task or problem (von Krogh et al. 2000).” (Nonaka, 2006).

  He concludes that knowledge is the actuality of skilful action, and/or the potentiality of defining a situation so as to permit action. In other words Knowledge is what someone acquired through practice and/or the capacity that someone has to solve a task or problem.

- In the third part, he considers that knowledge is explicit and tacit along a continuum (Nonaka 1991, 1994). Explicit knowledge is formulated in sentences and captured in drawings and writings, while, tacit knowledge is tied to the senses, tactile experiences, movement skills, intuition, unarticulated mental models, or implicit rules of thumb (Nonaka et al. 1996, 2000a, b). Knowledge moves from the tacit to the explicit part and vice versa.

Finally, he considers knowledge as “a dynamic human process of justifying personal belief toward the truth” (Nonaka and Takeuchi 1995, p. 58).

As mentioned before in the section “Information Technology”, there is a clear difference between data and information. Data by itself does not carry any information. But, data put in context (giveing facts about something or someone) becomes information. Knowledge however is a dynamic human process of justifying personal belief towards the truth; it is predictive and can be used to guide action.

Then we have three concepts that work at different levels: data, information and knowledge. Data does not specify anything about the context; Information is data plus references about the context, and finally knowledge could be considered information plus the human process of justifying beliefs towards the truth and potentially leading to action.

As a matter of example, let’s suppose that we have a Shaman that uses two specific herbs to prepare a potion to cure a specific illness. One possibility is that we know the name of the herbs, but we do not know more about the context (what illness they cure, how to prepare the potion, etc), what we have is just data.

The second possibility is that we know the name of the herbs and the context (the illness cured using them, and even an idea of how to prepare the potion), in this case we have information. However, it becomes knowledge after the dynamic human process of justifying personal belief toward the truth. It means that, it becomes knowledge in the moment that someone justifies to others that this potion is really effective to cure the illness. In order to create that knowledge the shaman used data, information, action (practice for example), previous knowledge (tacit and explicit) and the human process to justify his belief. After we have all the information (the herbs needed, the name of the illness they cure, the process to prepare the potion), and the justification of the efficiency of the potion to cure the illness, then we can talk about knowledge. Knowledge leads to action because now we are able to use the potion to cure the illness when it appears.

For this research, we consider that the most suitable definition of knowledge is the one proposed by Nonaka (1994,4).

1.6 Knowledge creation

Knowledge has been defined as ‘‘justified true belief’’ that increases an organization’s capacity for effective action (Nonaka 1994, Nonaka and Takeushi 1995). Nonaka and Takeushi (1995) based on the work of Polanyi (1967) consider that knowledge is composed of two dimensions: tacit and explicit and that organizations create new knowledge through the conversion and interaction between them.

The tacit dimension of knowledge is based on experience, thinking, and feelings in a specific context, and is comprised of both cognitive and technical components. The component refers to an individual’s mental models, maps, beliefs, paradigms, and viewpoints. The technical component refers to concrete know-how and skills that apply to a specific context.

The explicit dimension of knowledge is articulated, codified, and communicated using symbols (Nonaka and Takeushi 1995). The explicit dimension may also be classified as object based or rule-based. Object based knowledge is codified in words, numbers, formulas, or made tangible as equipment, documents, or models. Rule based knowledge is encoded as rules, routines, or standard operating procedures (Choo 1998).

Nonaka and Takeushi (1995) also make a distinction between individual knowledge and collective knowledge. Individual knowledge is created by and exists in the individual according to her beliefs, attitudes, opinions, and the factors that influence her personality formation. Collective knowledge resides and is created by the group and involves social norms that guide intra-group communication and coordination.

For Nonaka and Takeushi (1995) the efficiency of the knowledge creation process depends on the existence of an enabling context or “Ba”. They consider three kinds of “Ba” physical, virtual, mental. They affirm that knowledge is dynamic, relational, and based on human action; it depends upon the situation and people involved rather than on absolute truth or artefacts.

To explore knowledge creation, our study adopts the SECI Model (socialization, externalization, combination, internalization) (Nonaka and Takeushi 1995). This model seems to have been accepted by the academic community as universally valid in conception and in application (Glisby and Holden 2003). As a result, authors from

diverse research areas such as OL (organizational learning), new product development, and ICT (information and communication technologies), have used this model to conduct their investigations (Chou and He 2004).

As commented before at the heart of Nonaka's work is the premise that there are two types of knowledge: Tacit and Explicit.

Tacit knowledge is subjective and experience-based knowledge that cannot be expressed in words, sentences, numbers or formulas, often because it is context specific. This also includes cognitive skills such as beliefs, images, intuition and mental models as well as technical skills such as craft and knowhow.

Explicit knowledge is objective and rational knowledge that can be expressed in words, sentences, numbers or formulas (context free). It includes theoretical approaches, problem solving, manuals and databases.

Nonaka models knowledge transfer as a spiral process. Start with a matrix, in which existing knowledge can be in either form - tacit or explicit - and the objective of knowledge transfer can be to convey either tacit or explicit knowledge. Each mode of transfer operates differently:

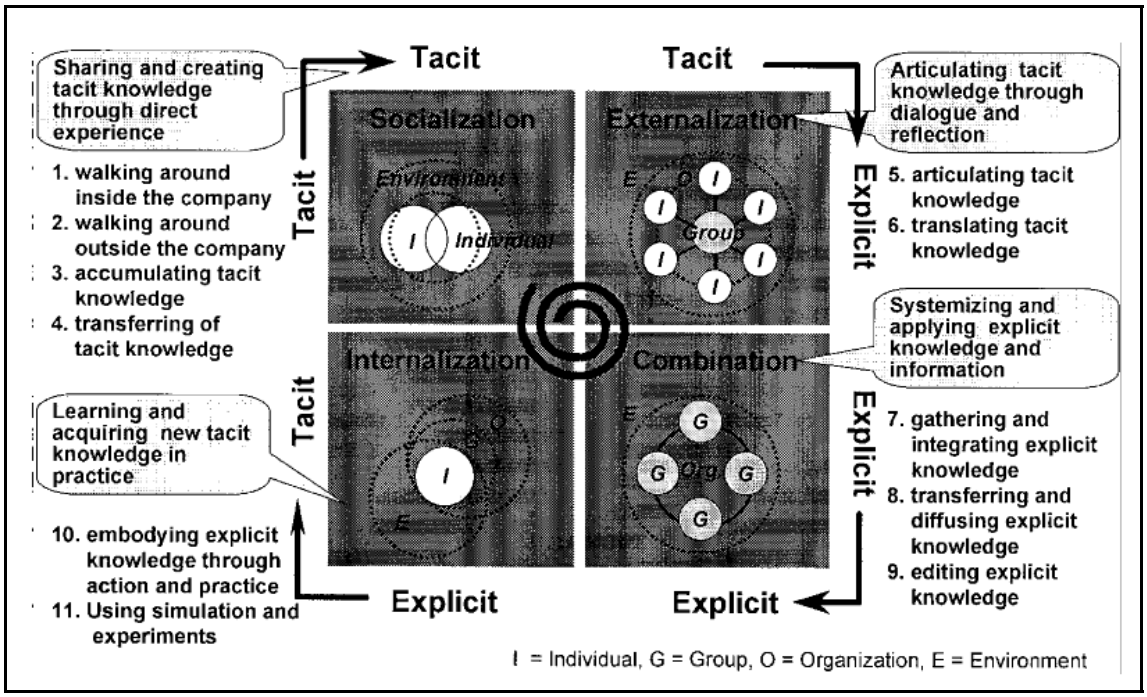

Figura 10 SECI Model of Knowledge Creation

Source: (Nonaka; Toyama, 2003)

1.6.1 Nonaka's Four Modes of Knowledge Conversion

In the eighties, a socio-psychological approach has become extremely influential in

Each type of knowledge can be converted. When viewed as a continuous learning process, the model becomes a clockwise spiral; organizational learning depends on initiating and sustaining the learning spiral. (The model is a spiral, not a cycle, because as one "learns" around the cycle, understanding moves to deeper and deeper levels.)

1. The process that transfers tacit knowledge in one person to tacit knowledge in another person is "socialization". It is experiential, active and a "living thing," involving capturing knowledge by walking around and through direct interaction with customers and suppliers outside the organization and people inside the organization. This depends on having shared experience, and results in acquired skills and common mental models. Socialization is primarily a process between individuals. For this research we consider that this part of the Knowledge Creation Process is strongly affected for the characteristics of the social capital of the organization. It means that the quantity and quality of the knowledge created depends on the characteristics of social capital.

2. The process for making tacit knowledge explicit is "externalization". One case is the articulation of one's own tacit knowledge - ideas or images in words, metaphors, analogies. A second case is eliciting and translating the tacit knowledge of others - customer, experts for example - into a readily understandable form, e.g., explicit knowledge. Dialogue is an important means for both. During such face-to-face communication people share beliefs and learn how to better articulate their thinking, though instantaneous feedback and the simultaneous exchange of ideas. We consider that social capital is also very important in this part of the process.

3. Externalization is a process among individuals within a group. Once knowledge is explicit, it can be transferred as explicit knowledge through a process that Nonaka calls "combination". This is the area where information technology is most helpful, because explicit knowledge can be conveyed in documents, email, data bases, as well as through meetings and briefings. The key steps collecting relevant internal and external knowledge, dissemination, and editing/processing to make it more usable. Combination allows knowledge transfer among groups across organizations. In this part of the process, social capital could be very important because the processing of data requires

besides information technology, the use of certain knowledge and skills that could be acquired through social interaction.

4. “Internalization” is the process of understanding and absorbing explicit knowledge into tacit knowledge held by the individual. Knowledge in the tacit form is actionable by the owner. Internalization is largely experiential, in order to actualize concepts and methods, either through the actual doing or through simulations. The internalization process transfers organization and group explicit knowledge to the individual, In this process, internalization of the new knowledge is also done through social interaction, so in this case we consider that the impact of social capital could be high.

1.7 Enterprise Information Systems and Knowledge Creation

For Huber (1991), Organizational Learning (OL) implies knowledge acquisition, information distribution, information interpretation, and organizational memory. Crossan, Lane, and White (1999) suggest that OL should be interested on new knowledge creation. Some researcher’s point that many organizations are employing new technologies to support his learning processes, but little is known about how learning is occurring using these technologies (Small and Irvine 2006). For some authors, there is a lack of empirical research (Dawes, Lee, and Midgley 2007, Vince, Sutcliffe, and Olivera 2002).

For Becker (2008) learning and unlearning are important for change and innovation in organizations. And, if as Rebernik and Sirec (2007) suggest, the better a firm understands the process of creating new knowledge and discarding obsolete knowledge, the probability to develop innovation behaviour will increase; then the knowledge creation process becomes an important variable for innovation.

OL in the form of accumulated knowledge from past experiences and from stakeholders (customers, suppliers, business partners, etc.) may be critical for how processes should be re-designed around ICT by fostering the learning of effective practices and the unlearning of the obsolete ones (Starbuck 1996). Moreover, having a proper ICT infrastructure can facilitate knowledge creation. However, it does not necessarily mean that this knowledge is created and transformed into OL, since knowledge will not necessarily circulate freely firmwide just because accurate ICT to support such circulation is available (Brown and Duguid 2000). Actual ICT use may be an important link to OL. The author points the difference between ICT adoption and ICT

use. The expected link between EIS and Knowledge creation is related to organizational learning (knowledge acquisition, information distribution, information interpretation and organizational memory). It is expected that EIS support the processes of information distribution, information interpretation and organizational memory and that this works as feedback to the process of knowledge acquisition (the knowledge creation process will be a sub part of the knowledge acquisition process).

1.8 Technology acceptance models

Several studies have investigated users' adoption behaviour (Venkatesh et. al., 2003).

2. METHODOLOGY

2.1 Introduction

The selection of the adequate methodology, which includes a method or various methods, to be used in a research, forms an essential part of every scientific work. The methodology determines how the data will be collected and evaluated; therefore, its selection should depend on the nature of problem or phenomenon that is the focus of the research. There are many ways to aboard one topic in practice, and there is no consensus of the scholars about the best method. Usually, researchers apply a set of methods, and different approaches which can go from purely qualitative or purely qualitative to a mix method which scholars choose as it might increase in some cases their research validity. Although most of reputed scientific journals give preference to quantitative over the qualitative type of studies, there are numerous academics which defend strongly qualitative research and consider that it can be in some context more valuable that quantitative research.

The present chapter describes and explains the particular approach of the empirical phase of this study. Besides the chapter of analysis of the findings, this part of the thesis represents the core of the research, and special attention was dedicated to it, in order to obtain quality data, and their evaluation. Even though at the beginning there were numerous doubts about the most suitable strategy to pursue, it has been clarified after consulting my mentor Professor Vicens, talking to my fellow-researchers, and subsequently to more exhaustive revision of literature on the subject in question.

Considering the nature of the theme of this research, we decided to take empirical qualitative approach, as we pretended to investigate the topic in depth. Unlike a quantitative approach, which centres to the extension of the phenomenon in question, a qualitative approach focuses in gathering rich information and details. To obtain that type of information, we created a semi-structured guide interview that aimed to collect the most information as possible.

We carry-out interviews in three preselected areas, for which this research is classified as a three case study investigation. In brief, we used an empirical qualitative approach, conducting semi-structured in-depth interviews in three cases. In the process of collection data, we used various sources: interviews, observations, documentation,

archives, and field notes that allowed the triangulation of data, and led to impressive findings. For analysis, we used the constructs and variables obtained from the literature review. The three cases were first analysed separately, then compared between them, and finally analysed altogether, driving to final conclusions of the field research. Based on the final findings the proposed model was validated.

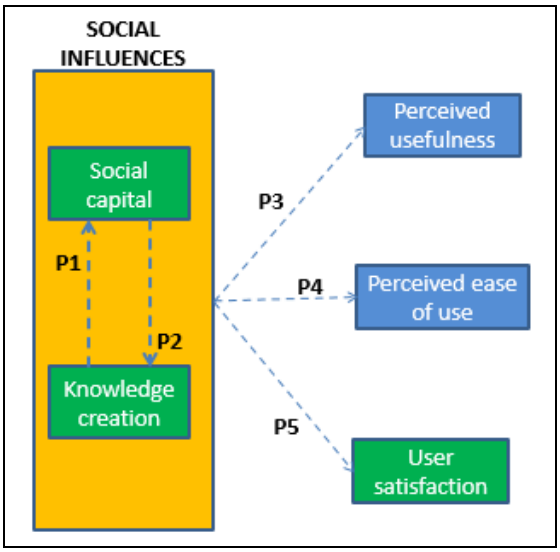

Figura 11 (Figure 6B) Hypothesis proposed to test SC-KC Information systems success model

Source: Elaborated by the author.

Explanation of the Proposed Model

The construction of the proposed model was based on two different models: first, D&M model presented by DeLone and McLean (1992), and second, TAM model offered by Davis, et. al (1989).

On one side, according to the D&M model (figure 12), proposed by DeLone and McLean (1992, 2003), user satisfaction measures the user opinion of the IS. As we can see in figure 12, for them User satisfaction has an individual impact and then an organizational impact.

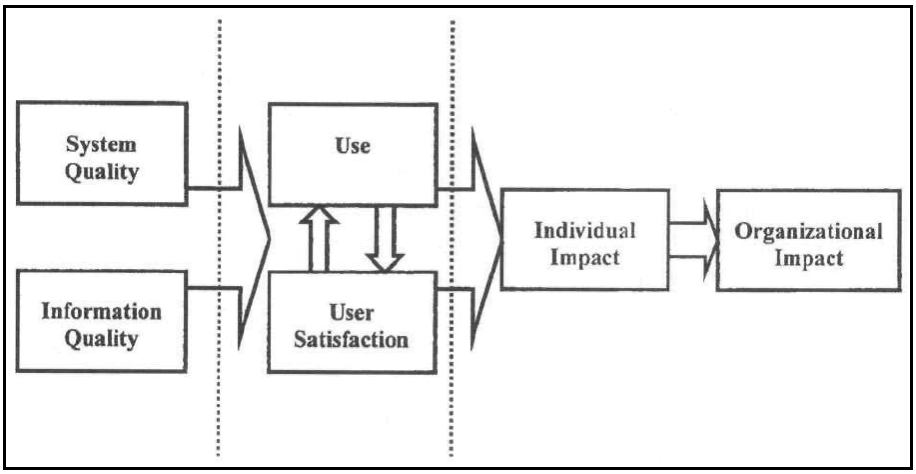

Figura 12 D&M IS Success Model

Source: De Lone, W and McLean, E.[7]

On the other side TAM model (figure 13), proposed by Davis, et. al (1989), gives an explanation of the determinants of computer acceptance. Perceived usefulness means ‘‘the prospective user’ subjective probability that using a specific application system will increase his or her job performance within an organizational context,’’ (Davis, et. al. 1989, pp. 321). It has been utilized in many studies to explore user perceptions of system use (Shang et. al., 2005), and has been shown to be a strong determinant of user acceptance (satisfaction). (Fuller rt. Al., 2010; Tenenhaus et. al., 2005).

In the D&M model, system quality and information quality are used as measures that affect user satisfaction. For this research, we use social capital variables (social interaction, trust, knowledge sharing and knowledge creation variables) some of them have been used before for other authors (Van den Hooff et. al., 2009)

[7] Reprinted by permission, W. DeLone and E. McLean, Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research.* 3(1), 1992, pp. 60-95. Copyright 1992, The Institute of Management Sciences (now INFORMS), 901 Elkridge Landing Road, Suite 400, Linthicum, MD 21090 USA.

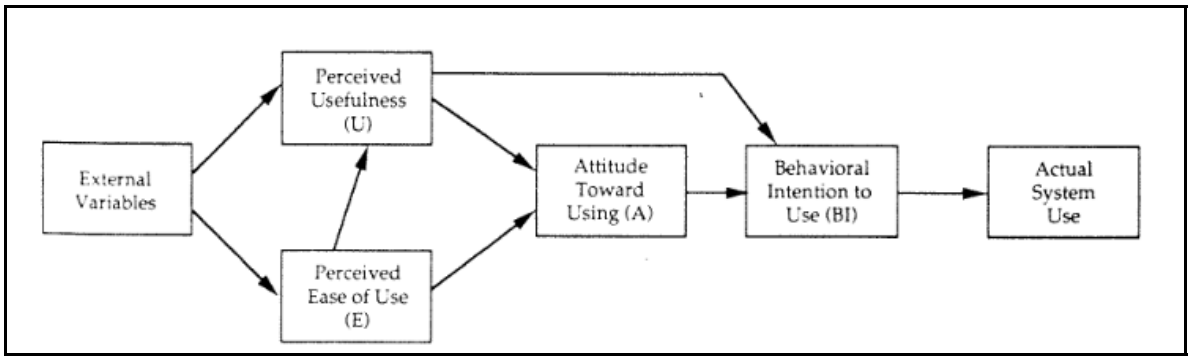

Figura 13 Technology Acceptance Model (TAM)

Source: Davis, et. al (1989).

We suggest that perception of the users of ICT concerning the usefulness of the systems “perceived usefulness”, the “perceived ease of use” and the “user satisfaction” are influenced by two variables. On one side “Social Capital” and on the other side “the knowledge creation process” of the company. We call to this the “Social Capital-knowledge creation process” system.

As we can see in figure 12, DeLone and McLean (1992) propose that “use” and “user satisfaction” of the system have an influence on “individual impact” of the system and that this “individual impact” influences the “organizational impact” of the use of ICT. It means that the use of the systems (ICT) at the end has an impact on the organization. However, given the scope of this research, we accept the suggestion of DeLone and McLean (1992) and we are not going to prove the influence of “user satisfaction” on “Individual” or “organizational impact”. For this research, we are concentrating our efforts on proving the impact of “social capital” and “knowledge creation” on perceived usefulness”, “perceived ease of use” and “user satisfaction”. See Figure11(6B).

The literature research on the subject of methodology, that is presented in the theoretical framework of this chapter, was conducted on Google scholar, on ReCercador+ which is the formal search engine of articles at University of Barcelona, Scopus, Web of science, Compendex, and Academic Search Complete which is used by the University of Porto. The site of Google scholar served us to detect articles and download the bibliographical references, the other sites to download the articles. For the management of the literature review references EndNote Software was used.

We determined the field of our interest in two areas: first of all, the concepts of methodology that briefly includes the corresponding propositions of paradigms, epistemology, and ontology; and second, more in profound, the concepts that are more closely connected to the empirical part of investigation. The later comprehended the search of articles on the above mentioned search engines of the following terms: "*case study*", "*qualitative research*", "*validity*", "*generalizability*", and "*selecting cases*". The criteria used to the selection of articles was based on the number of citations, and the journal in which they were published on the one hand, and on the information presented in their abstracts which is related to research methodology used in this study, on the other. Filtering the articles, we arrived to the seven most essential for this research: Dubé and Paré (2003), Small (2009a), Gerring (2004a), Flyvbjerg (2006), Eisenhardt (1989), Mitchell and Bernauer (1998), and Robert K Yin (2009). Besides, we included some secondary literature articles to complete the search on the topic in question. And, finally, the process of literature review followed the logic of saturation.

The methodology chapter is divided into several parts, giving it certain logic and better visibility of the goals that are to be achieved in this stage. Thus, the structure of this section counts with the theoretical background of methodology concept, which was used here, its justification, and purposiveness. The first part is dedicated to clarifying the research purpose. The second part is dedicated to the research methodology, in this section ontological and epistemological aspects of this research are clarified, the concept of hybrid approach is explained, and the research methods used are defined. In the third part of this section the research strategy is exposed and finally in the fifth part the research design is explained.

2.2 Research Purpose

This research expects to contribute to both theory and practice. This research is new and innovative because it integrates social capital variables with knowledge creation variables and evaluates the impact of all of them on user acceptance of information systems. The analysis of the relationship between "social capital" and the "knowledge creation process" on user acceptance of information systems in small and medium enterprises of Catalonia, will contribute to enrich the information technology acceptance theory, the social capital theory and the knowledge creation theory. The explorations into the use of "social capital" combined with the "knowledge creation

process" to support technology implementations will contribute to practice by providing practical tools for information systems professionals and small and medium enterprises interested in improving the information system use and acceptance. Also, it will provide organizations with practical tools to manage and potentiate the use of social capital and knowledge creation initiatives together. The next section will explore the research paradigms, methodology, methods and strategy needed to conduct this research.

2.3 Research Methodology

2.3.1 Ontology and Epistemology

In this section we clarify the concepts ontology, epistemology, and methodology, because they are especially important in every research. In a philosophical term, the word ontology is related to subject of existence and 'theory of being'. According to Punch (1998), ontology refers to "what we know", to "what exists", the form and nature of our reality. It can be said that there are two different ways of seen the world. The Realist that looks knowledge as objective and considers that the empirical world is objective and independent of humans and the Nominalist that considers that the empirical world exists through human experience. (Orlikowski and Baroudi, 1991). It can be considered that any research can be in a point between these two extremes.

Guerring describes epistemology as "… a vision of the world as it really is, a more or less coherent set of assumptions about how the world works,…" (Gerring, 2004b). It is also considered that "Methods of scientific inquiry are languages to the extent they constitute systems of thought, with terms and ways of framing problems that are specific to their systems" (Small, 2009a).

Epistemology refers to "how we know what we know", how we make value judgements or how we know what is true (Hamre, L). Epistemology is related to the question of what knowledge and the relationship is truly between what is known and who knows it (Punch, 1998; Orlikowsky and Baroundi, 1991). The epistemological viewpoint of a research model is useful to understand the research outcomes.

From a research perspective, the way people look at the world falls between positivist and interpretive points of view (Braa and Vidgen, 1999). On one hand, a positivist approach is logical, empirical, and value-free (Susman and Evered, 1978) and the researcher is an observer, who acts as an outsider to the process, and tries not to intervene in the situation (Braa and Vidgen, 1999). For positivists it is basic to create

new knowledge only when it can be verified through measurement and observation (Domholdt, 2005). Generally, positivist research starts with a theory or predetermined relationship which is then investigated using structured instruments such as surveys or laboratory experiments (Orlikowski and Baroudi, 1991). Quantitative research comes from the positivist perspective where information is expressed as numbers and can be quantified (Punch, 1998). Another important characteristic of quantitative research is that it seeks to prove causal relationships in order to predict future situations based on particular relationships or variables (Punch, 1998).

On the other side, the interpretivist approach, assumes that individuals create their own subjective reality as they interact in their environment (Orlikowski and Baroudi, 1991). The goal of interpretive research is to understand the world from the inside, one situation at a time. From the point of view of interpretivists epistemology, reality is situational social construct. For them knowledge is generated generating an understanding of the complex environmental and information about an specific situation at an specific time is obtained. In in interpretive research the aim is not to find an universal truth, but to try to fully understand a unique and complex human process in a particular situation, that can then be used to inform other situations (Baskerville and Wood-Harper, 1996, Orlikowski and Baroudi, 1991). Generally interpretive research is qualitative in nature and looks for empirical information about the environment that is not in numerical form (Punch, 1998). This kind of information uses to be in the form of words, such as interviews, transcripts, recordings, or observational records.

For interpretivist Positivism is deficient as a mean of understanding social situations, they also consider that the idea of causation as a positivist perspective. Interpretivists consider the world as too complex and dynamic to look for a causal relationship (Punch, 1998). According to Susman and Evered (1978) positivism is deficient in generating knowledge for organizations who need to solve unique problems due to a number of reasons, between them the positivist treatment of people as objects of inquiry, the fact that history is not taken into account, and the fact that methods are values neutral. According to Lee (1991) the interpretive approach maintains that the methods of natural science are inadequate to the study of social reality, and he adds that interpretive approach considers people and the physical and social artifacts that they create, are fundamentally different from the physical reality examined by natural science.

2.3.2 Hybrid Approach

In terms of epistemology traditionally research is conducted from a single approach, either positivist or interpretive. Given the fact that research related to Information systems takes place in organizations which are complex human-technical systems, a single epistemological approach has been questioned. According to Evered and Louis (1981) “Our ability to grasp the breadth, depth, and richness of organizational life is hampered by allegiance to a single mode of inquiry”. Also Orlikowski and Baroudi (1991) showed a concern: “An exclusive view is always only a partial view, and the dominance of positivism, by not acknowledging the legitimacy of other research traditions, has limited what aspects of information systems phenomena we have studied, and how we have studied them. This has implications not only for the development of theory and our understanding of information systems phenomena, but also for the practice of information systems work. Taking this into account for this research it was decided to mainly use the interpretive approach because we consider that it is more helpful to allow us to perceive the social and cultural settings, that contribute to understanding of people beliefs, feelings, convictions, attitudes, and values. What we pretend in this research is to get comprehension on the phenomenon related to the use of social capital and the knowledge creation process when using information and communication technology in organizations.

In order to overcome the partial view of complex organizations, in recent years researchers have been increasing the use a combination of interpretive and positive methodologies. (Braa and Vidgen, 1999, Trauth and Jessup, 2000). For this research in certain way we are comminating both methodologies in the sese that even if we mainly use interpretive approach, at the end we expect to get enough evidence to previously validate our propositions as hypothesis.

For Mingers (2001) there are three types of multi-method research approaches. First, loose pluralism which supports the use of a variety of research approaches and does not specify how or when positivism or interpretive is used. Second, complementarism which uses different approaches based on different assumptions about the context of use; this uses a positivist approach in one situation and an interpretivist in another situation according to the research question and methods used. Third, strong pluralism to mixed method, in this approach all research is seen as complex and multi-dimensional socio-technical system and it is expected a benefit using a range of

methods. For this research project we are using the third research approach, strong pluralism.

The implementation of a multi-method research project or complementarist approach has some challenges. For Mingers (2001) there are three main challenges for the researcher when conducting a multi-method study. The first is philosophical in that the two approaches are so different ontologically and epistemologically that the researcher must select one approach. The second challenge is cultural in that the IS community has traditionally held that positivism in only valid scientific approach (Lee, 1991). The third challenge is psychological, it makes reference to the ability of a researcher to move from one approach to another.

In order to understand which approach to adopt in each situation, the researcher must understand the implications of each research perspective and act in ways that reflect that knowledge (Orlikowski and Baroudi, 1991, Lee, 1991). Evered and Louis (1981), provide a means of understanding the implications of the two research perspectives (see table 3). There is no right or wrong approach, the choice of approach should depend on the research question, the situation, and the researcher´s expertise (Evered and Louis, 1981).

Table 3 Characteristics of analytical and interpretive evaluation

(Source: Stone, 1990, Evered and Louis, 1981)

Characteristic	Analytical (Positivist)	Interpretive
Researcher's Role	Onlooker	Participant
Researcher's Relationship to Setting	Detached, Neutral	Immersed, Involved
Validation Basis	Measurement and Logic	Experiential
Sources of Categories	Predefined	Emergent
Aim of Inquiry	Universality and generalizability	Situational relevance
Knowledge Acquired	Universal, Nomothetic: Theoria	Particular, Idiographic: Praxis
Nature and Meaning of Data	Factual, Context Free	Interpreted, Contextually Embedded
Evaluation Language	Quantitative (High precision, low variety)	Qualitative (Low precisions, high variety)

Both approaches have something to offer a researcher and do not necessarily have to be mutually exclusive (Trauth and Jessup, 2000, Lee, 1991). According to Evered and Louis (1981) “One is methodologically precise, but often irrelevant to the reality of organizations; the other is crucially relevant but often too vague to be communicated to or believed by others.” By understanding the implications of each approach, it is possible to deploy the approach most appropriate for the researcher, the research question, and the research method.

2.4 Research methods and design

The nature of the phenomenon or the specific “problem” that occurs in determinate social context can be studied in different ways depending on the manner the researcher wants to abroad it. The adoption of one model or theoretical framework as a result of belief systems and values in reference to the nature of knowledge and existence, the researcher uses to conduct a systematic investigation where he/she aims to understand, describe, explain, in some cases to predict and/or to control the given phenomenon or problem, in its natural settings. Understood in this way, the paradigm is not precisely the theory, but rather the framework that influences the way knowledge is studied and interpreted, and employs the particular ontological, epistemological, and methodological assumptions.

The term ‘epistemology’ has origins in Greek, and refers to knowledge. It is considered as philosophy of knowledge, and tries to answer the question ‘*how do we come to know*’, ‘*how do we know what we claim to know*’. The methodology is a practical part of epistemology that involves employment of logic of social inquiry in order to discover and validate knowledge (Livesey, 2014). There are numerous definitions of the ‘paradigm’ and depending on authors, they vary considerably. The one, which might be the broadest one, proposed by Kuhn (1962) says: “*paradigm is an entire constellation of beliefs, values, techniques, and so on shared by members of a given community*”.

Table 4 Research design

(Source: Authors own elaboration)

VARIABLE	OPTIONS		
RESEARCH PARADIGM	**INTERPRETIVISM**	CRITICAL	**POSITIVISM**
KIND OF STUDIES	EXPLORATORY	**EXPLANATORY**	DESCRIPTIVE
RESEARCH APPROACH	**QUALITATIVE**		QUANTITATIVE
RESEARCH METHODS	**CASE RESEARCH**		
RESEARCH DESIGN	**MULTIPLE CASE STUDY**		
	NATURE OF RESEARCH QUESTION	THEORETICAL FOUNDATIONS	CRITERIA FOR CASE SELECTION

Delimiting the notion of the paradigm, the following step is to present briefly the encountered paradigms in the literature. Although there are various classifications of paradigms, we mention here two. First, by Guba and Lincoln (1994), includes four philosophical assumptions: positivism, post-positivism, critical theory, and constructivism. Second, which incorporates three main paradigms that were adopted in this research: positivist and post-positivist, critical, and interpretive (Chua, 1986; Orlikowski & Baroudi, 1991).

The positivist perspective, another way called “scientific method” or “science research”, which is based on empiricism, is considered more appropriate for physical and natural sciences in general, and quantitative type of research, and in some way it was replaced by post-positivism in the mid of XX century. The post-positivists critic the rigidity of positivists and adjust its position. The post-positivists point of view is that there are multiple and variable realities, suggesting that this perspective includes intuition and holistic perspective, affirming that it is compatible with inductive and exploratory outcomes of qualitative type of study (O'Leary, 2004). She adds, "… *what might be the truth for one person or cultural group may not be the "truth" for another*".

The interpretive paradigm, commonly present in qualitative studies as a more suitable approach for social inquiry, relies on the assumption that meanings and understandings are developed in social interaction and experimentally. Put it on the

other words, one is inseparably connected to what he believes. Its basic characteristic is that researcher immerses him/herself into specific social or cultural context or the situation where he conducts his/her investigation. For that reason, it is frequently labeled as subjective, as its interpretations of findings are very open to bias due to researchers' active interaction with participants in the given study. The interpretivist approach is considered appropriate for studying human behaviours, as its methods are capable to perceive the nuances and unveil hidden beliefs and meanings expressed trough the contact with the participants. Commonly, for this type of studies that occurs in natural settings, researcher use ethnography research design, relining on the observation, documentation, tape recording, as a set of methods to collect information.

The critical paradigm is related to the "Frankfurt School", from the 30ties of the past century, and counts with well-known members, like Habermas, Adorno, Horkheimer, and others. The critical assumption is built around the theoretical belief according to which our knowledge of reality is not ideal. In addition, the critics (they) affirm that one can only reach the reality from his or her own perspective of it. This means that the objective reality and the real world objects can hardly be captured by the human knower as it is really. The critical current assumes that persons possess the conscience about the real world, but their actions which could conduct to change, are restraint by social, cultural, economic and political domination. The critical type of research aims to discover oppositions, conflicts and contradictions in the contemporary context (Myers, 1997). For that reason, this philosophical perspective does not form the part of the present study, although in some other context it might be considered a good one.

The first two mentioned paradigms, the interpretivist, and the positivist, are considered for this research for following reasons: first, the interpretivist method allows understanding and interpretation of meanings that persons associate to them, and it is commonly used in qualitative type of research, which give the researcher more confidence in that this is appropriate method for her study. Second, the positivist, on the one hand is interesting as we have a priori plan to refute proposed hypotheses and hope to find evidence that will lead to generalizability. On the other hand, it relies in great part on the intuition and support includes holistic perspective, and as we shall see later, it is compatible with inductive and exploratory findings of qualitative type of study.

The paradigms include three main groups or types of studies: exploratory, explanatory, and descriptive or illustrative. While in the descriptive studies researchers employ no

theoretical base of the phenomena approach, in the exploratory and explanatory studies are based on theoretical foundations to identify questions, construct models and theories, for the posterior analysis of causal studies and corroboration of theories.

Exploratory type of research studies is oriented towards discovering a new phenomenon, where a researcher tends to understand the main clues and variables of the phenomenon in the question. Therefore, it normally requires a broader focus, and awareness of limitations in when it comes to responses to the particular research matter. The objective of exploratory studies is to formulate problems, define concepts, and create hypotheses. There is mainly qualitative type of data obtained from brainstorming sessions or interviews with skilled professionals in the specific field or on the specific topic, etc. Thus Eisenhardt (1989) affirms that exploratory research strategy serves for what she calls theory-building investigation. She recommends that it should be placed as close as possible to the ideal, which is not influenced by any existing theories, and try to avoid hypotheses to corroborate, because it could manipulate the results. Put it into another words, Eisenhardt recommends, on the one hand, a distance from existing theories; and on the other, to avoid test of hypotheses, as it could slant the earlier proposed model, and prevent proper theory-building research.

Explanation research centre on the explanations of the nature specific relationships; why it occurs, and to predict it. Testing models or corroborating hypotheses represent common techniques, and in the contrast to exploratory those types of studies that do not have predetermined key variables. The explanatory research disposes key variables and key relationships from the beginning, and try to unveil the nature and direction of relationships between or among those variables. The goal here is to generalize the findings to the rest of the population. The main, but not exclusive approach in obtaining the data is quantitative, as it aims statistical representativity. But as explained later in this chapter, the representativeness and the validity may be achieved from the qualitative type data as well.

Descriptive studies are as exactly as that – descriptive. They provide the exhaustive and meticulous description of the phenomenon or the problem under the investigation. However, those studies do not provide the explications for origins of the specific problem – behavior or motivation – impeding thus creation the causal research relationship between variables. The two most frequently type of descriptive research designs are observation and survey.

Given that this research aims to understand the relationship between social capital (SC), knowledge creation process (KCP) and Information and communication technologies (ICT) in Small and Medium Enterprises **(SME)**, we are interested in observing as much variables as possible in order to try to establish certain relationships between them and generate general principles about this specific subject. This investigation has the character of an exploratory-explanatory research.

2.4.2 Qualitative approach

As what we pretend is to study to persons in his workplace, a qualitative approach fits perfectly to our research. Qualitative methods are suitable for the case study approach where the design is "naturalistic" in structure because the goal of the research is to explain occurrences in a natural setting. Capturing the experiences of the participants in their own words through the interview process provided significant insight into their opinions and the value they each place on the different aspects and facets of their work(ing) experience. In this sense, we are interested in an holistic perspective. Throughout the semi structured interview we want to capture not only individual variables, but organizational variables. That is why an open semi structured interview is the best approach for us.

The choice of method is important and it depends on the nature of phenomenon which is observed and its characteristics (Flyvbjerg, 2006). It allows a researcher to see a holistic setting of the phenomenon under the investigation. As Dubé and Paré (2003) point out: "*Research methods shape the language we use to describe the world, and language shapes how we think about the world*". Others consider that qualitative researches might be useful " *… to understand in more detail the nature of causal relationships*" (Bennett & George, 1997; King, Keohane, & Verba, 1994).

The quantitative approach, issued in the natural sciences milieu to study natural phenomena, is for sometimes equally accepted by social sciences which use it for survey studies and laboratory experiments. The qualitative research method, like case study, ethnography, action research, etc, has its roots in social sciences. Qualitative data are frequently obtained from interviews, observations, questionnaires, documents, archives, etc. Qualitative methods are design in the way that they allow a researcher to perceive the social and cultural settings, which contribute to understanding of people beliefs, feelings, convictions, attitudes, and values. As Kaplan, Maxwell, Anderson, Aydin, and Jay (1994) suggest, the great advantage of qualitative over quantitative

approach lies on the fact that it allows the understanding a phenomenon from the point of view of the participants.

The problem of selecting the adequate empirical strategy bothers many researchers, especially ethnographers and qualitative researchers. Other point that trouble some scholars is, as Small (2009b) unveils, an unequal status of qualitative and quantitative studies in publishing articles in highly regarded journal such as American Journal of Sociology, the American Sociological Review, and Social forces. The unfair treatment of qualitative studies, affirms Small, is also present in public and nonprofit organizations. Nevertheless, as aforementioned, depending on the subject which is being studied, it might be not only the best, but the sole method possible.

2.4.3 Qualitative data process

There are three central phase in qualitative data process: first one is data collection; second, process data; and the third is analysis data. These three phases of qualitative data process consist of several sub-phases. The first phase of data collection consists of processes of listening, observation, interviewing, and archiving. The results of the first phase present raw data. The second phase, process data includes audio recording, jotted notes, and field notes (emotions, body language). The results of second phase are recorded data. The third phase of qualitative data process, analysis data consists of sort and classification of recorded data, open coding of recorded data, axial coding of recorded data, selective coding of recorded data, and finally interpretation and elaboration. Finally, from the third phase, we obtain processed data. Figure N°3, situated below, is visual presentation of qualitative data process that includes all steps that have been used in this study.

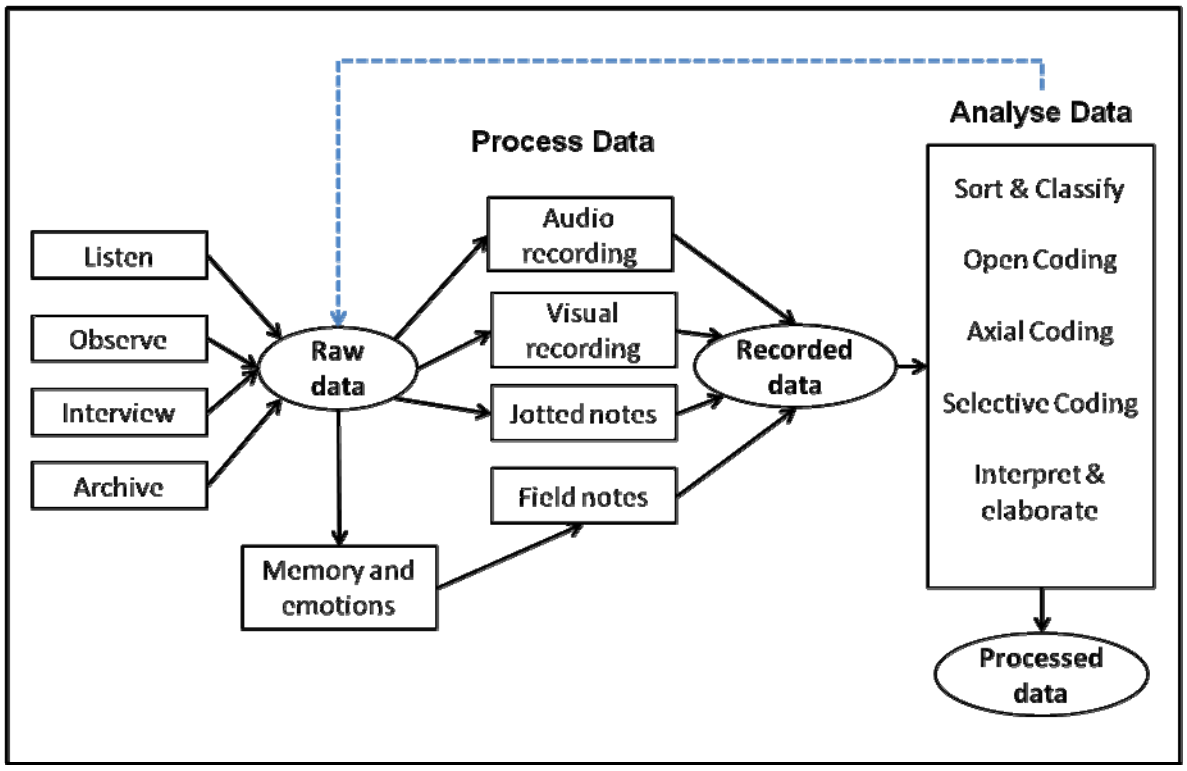

Figura 14 Qualitative data process

Like the figure above shows, at the beginning of this empirical data research that includes data collection of raw data, were used techniques of interview, observation, and documentation. Next, the interviews were recorded, to which the corresponding jotted and field notes were associated. The material obtained in this phase served as a foundation for the data process and analysis. The first step in data analysis in our research was to organize and catalogue the recorded material. Then, we codified it in order to make it visually easier to perceive certain connections and relations between the concepts and categories that led us to the next level of axial coding or relating the mentioned concepts and categories. The outcome of axial coding then was described and interpreted, in the last phase of the qualitative data process.

2.4.4 Case study

The case study is an all-encompassing research strategy that is defined as an empirical inquiry that investigates a contemporary phenomenon within the context of real life. This approach is especially appropriate when the boundaries between

phenomenon and context are not clearly defined or plainly evident.(Robert K. Yin, 1984). Similarly, Dubé and Paré (2003) define a case study as " … *an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*". In our research, as we are studying a contemporary phenomenon as the use of ICT and given that the boundaries between phenomenon and context are not clearly defined, we will use a case study.

The case study approach is inductive in nature due to the fact that the research begins with specific observations and builds toward general patterns and describes the naturally unfolding program processes and impacts (Patton 1987). In this sense also the case study approach fits correctly our needs, because we are looking for evidence to support our proposed model, we are looking for general patterns in many studied cases.

Many authors proposed their theoretical foundation of case study. Gerring (2004b) in more interested in the question of generalizability, and propose a following definition of a case study: " ... *an intensive study of a single unit with an aim to generalize across a larger set of units*". In addition, he considers that this method implies " *a particular way of defining cases*", and it should not be confused with method of causal relationships nor analyzing cases. The author refers to a 'unit' as "*spatially bounded phenomenon*". Eisenhardt (1989) defines case study as "*a research strategy which focuses on understanding the dynamics present within single settings*". This research approach allows to focus on emerging phenomena and ultimately induce theories (Benbasat, Goldstein, & Mead, 1987). Case study approach is recognized by many academics as an appropriate methodology to answer research questions such as "why" and "how" things are done (Robert K Yin, 2009).

It is interesting Flyvbjerg's (2006) point of view, in which he openly and directly criticizes the "oversimplified" definition of case study from the Dictionary of Sociology, which follows: "*The detailed examination of a single example of a class of phenomena, a case study cannot provide reliable information about the broader class, but it may be useful in preliminary stages of an investigation since it provides hypotheses, which may be tested with a larger number of cases*". Flybjerg perceives five points or as he names them - misunderstandings - which derive from this method. First, greater value of general or theoretical knowledge over concrete or practical knowledge. Second, impossibility of generalization from a single case does not meet the scientific criterion

of development. Third, case study research method is suitable for generation of hypotheses, but not for hypotheses testing nor for theory building. Fourth, the validity issue due to researcher's partiality. Fifth, complexity of generating models and theories on the findings of an individual case.

Case studies types of researches apply logic. Robert K Yin (2009) distinguishes case study logic and sampling logic. Accordingly, Small (2009b) believes that using a case study logic can be useful for in-depth interview-based studies, and applies on multiple case studies. Statistical representativness is what sampling logic strives; meanwhile in the case study logic the saturation is an objective to achieve. In the later, the number of units and cases is not determinate until the end of field work, and their collection is not representative.

One of the main characteristics of a case study design is that the last case pretends to replicate the previous ones, aiming to corroborate if the same elements are present. This technique is called 'literal replication'. The 'theoretical replication' is oriented to detect the presence of divergence to the previously theory respectively. In sum, sample logic suits more for descriptive questions in reference to a population, and case study logic for asking questions of *how* and *why* questions in reference to processes unknown before the start of the study (Small, 2009b). Similarly, Anderson, Crabtree, Steele, and McDaniel (2005) emphasize the issues of the problem, and his consideration is oriented towards the question of why it surges in the first place.

One of the strength of case study strategy is that is allows in depth analysis which is achieved thanks to the details, richness, and wholeness obtained from the observations (Gerring, 2004a).

Case research method is a method to be used when: 1) phenomenon is broad and complex, 2) when a holistic, in-depth study is required, and 3) when the phenomenon under the investigation is observed in real-life context (Benbasat et al., 1987; Bonoma, 1985; Feagin, Orum, & Sjoberg, 1991; Robert K Yin, 2009). This research approach is close relation to empirical data, and is suitable for new theories and constructs. Defining constructs at the initial phase of research allows researchers to measure them more precisely, later in the interview guide and questionnaires. There is an omnipresent comparison of theory and data. Yin implies that the case study may be composed of one or several cases, and numerous level of analysis.

In order to reach a credibility of a results of the study, and to generalize its, Robert K Yin (2009) and Benbasat et al. (1987) consider that a thorough description and complete picture of study context is necessary. It should include as many details as possible, such as setting –case period, site description, nature of data, collection period/periods.

Others, such as Flyvbjerg (2006), highlight the narrative side of case studies, which often involves contradictions of real-life situations, and provide potentially very rich source of information that sometimes can be difficult to summarize into theories and propositions. This is precisely where lies the challenge and the opportunity for a good researcher to interpret the given phenomenon. "*Narrative inquires do not – indeed, cannot –start from explicit theoretical assumptions. Instead, they begin with an interest in a particular phenomenon that is best understood narratively. Narrative inquiries then develop descriptions and interpretations of the phenomenon from the perspective of participants, researchers, and others*". (Flyvbjerg, 2006).

According to Flybjerg, the validity and generalizability of the findings are always relevant elements in any inquiry. In social sciences, case selection may contribute to validity and generalizability of a case study research. Flybjerg cites Popper's metaphor "all swans are white", to demonstrate the generalization from the "falsification". The generalization from "falsification" is a type of case study which requires selection of critical case. The falsification test is considered among the rigorous scientific tests. If there is only one case that contradicts to the proposed statement then there is neither validity nor generalizability.

In Small´s (2009a) opinion, the ethnographic method, which in many cases lean on relatively '*small-n*' studies, if often criticized by demographers and quantitative sociologist in reference to variable selection (representativeness) and its validity (generalizability). "*Selecting cases according to these methodological guidelines requires some initial knowledge of possible cases. One can often identify potentially valuable cases trough discussion with other scholars, scanning the secondary literature, or, if necessary, conducting a pilot study*".

Small poses the question: "*How many people do I need to interview*" in order to gain generalizability, insisting that there is no generalizability in statistical, but rather in logical terms. In addition, Small considers that number of cases collected by these techniques should not be judged by standards of classical statistics, and that their

objective is not to be 'representative', but rather that they should be understood, developed, and incorporated into the researchers understanding of the cases. Small (2009a), interprets King et al. (1994), saying that it is always positive to obtain as much as possible information and particularities of the units in which researchers pretend to conduct his/her study, albeit this does not mean he/she will achieve a statistical generalizability. Furthermore, the statistical representativeness is an irrelevant norm, and it is far more important to answer whether an analysis is valid (Mitchell & Bernauer, 1998; Small, 2009a). Mitchell makes difference between statistical, and logical (or causal or scientific) inference. He says that logical inference permits construction of explanatory schema that researcher uses to reach conclusions about presence of one or more features in a larger context based on a sample.

Flybjerg considers that generalizability of case studies can be achieved by purposive selection of cases which facilitate the richest source of information and details about of phenomenon under investigation, and excludes the principle of representativeness, explaining that the typical or average cases often do not provide the greatest data. On the contrary, he affirms that atypical and extreme cases can supply a researcher with more details as they activate more actors and more basic tools in the study on hand. He does not pay much attention to merely description of the reasons of phenomenon and how frequently they appear, instead he insists on importance of explanation of the hidden causes of the phenomenon under the study and its consequences.

Flyvbjerg distinguishes four types of information-oriented case selection: 1) extreme/deviant cases, 2) maximum variation cases, 3) critical cases, and 4) paradigmatic cases. Using the strategic or purposive choice, researcher can economize time and money.

Critical cases have purpose to achieve information that permits logical deduction of the type. "*If this is (not) valid for this case, then it applies to all (no) cases*". Put it in other words, Flyvbjerg (2006) recommends selection of "most likely" or "least likely" cases in order to clearly confirm or irrefutable falsify propositions and hypotheses. In addition, he proposes selection of "most likely" cases of falsification of propositions, and "least likely" for test hypotheses. "*It should be remarked that a most likely case for one proposition is the least likely for its negation*". Finally, Flyvbjerg does not exclude the possibility of simultaneous existence of extreme, critical, and paradigmatic inside one single case, and emphasizes the richness of data that mixed type of case study, might provide.

Corroboration of multiple qualitative techniques, in the case study research, enhances the validity and generalizability of findings, and should, as Robert K Yin (2009) suggests, follow replication logic (theoretical or literal). Put it in other words, replication surges when a researcher purposely select cases for his study with expectation to obtain similar results. Therefore, replication logic reinforces validity and generalizability. Consequently, the generalizability to other cases is important as it serves as a link of the findings back to broader theoretical debates.

The premise of generalizability is internal validation. Thus, (Mitchell & Bernauer, 1998) affirm "*Internal validity is a precondition for external validity. Selecting cases to hold the value of certain variables constant increases the internal validity of causal inferences derived from the study but simultaneously limits the range of cases to which one can validly generalize*".

Multiple-subject case studies are especially useful if topics are too complex or involve too many actors to be addressed using a simple interview survey, or where the researcher can exercise little control; and which focus on contemporary, rather than historic information. As our topic is complex, is based on contemporary information and we cannot exercise control, we will use a multiple case approach.

There are three main reasons for which multiple case design will be used in our research:

First, we are studying a broad and complex phenomenon that requires a holistic in-depth investigation and the phenomenon must be studied in the context it occurs, (Dubé and Paré 2003). Second, as we are studying information systems in organizations and we are especially interested in social capital and organizational issues, this method let us to track the changes that occur in several variables (social capital, knowledge creation, organizational issues, technology, etc.) Third, comparisons among different enterprises may be very useful in order to demonstrate the influence of variability in context (Pettigrew 1989) and therefore yield more general research results (Benbasat et al. 1987; Yin 1994).

For the issue of generalizability and validity, we decided to apply the purposive selection of cases, for which we believe would provide the best information relevant to this study. In light of limited resources, we opted for Flybjerg's (2006) extreme or deviant selection of cases, which is recommended as suitable for purposes of confirming or refuting the statements, albeit we do not discarded completely the

possibility of mixing it with others types of case selection previously mentioned. We did not specifically aimed the case study logic of saturation as argument of generalizability and validity, as we proposed at the beginning the three case study research design. Nevertheless, after the findings obtained from these cases, we may affirm that the saturation was achieved.

2.4.5 Explanation of the main constructs

In a philosophical term, the word ontology is related to subject of existence and 'theory of being'. It is often mistaken as epistemology. Guerring describes it as "… *a vision of the world as it really is, a more or less coherent set of assumptions about how the world works,*…" (Gerring, 2004a). It is also seen as "*Methods of scientific inquiry are languages to the extent they constitute systems of thought, with terms and ways of framing problems that are specific to their systems"* (Small, 2009a).

A part of philosophical standing of the ontology, which is not of our interest here, there is a more pragmatic use of this term. The ontology, which we present in this work, should be understood as a set of concept definitions, aiming to describe what we meant by specific word, concept or construct. The creation of the operational ontology was undertaken as a creative process, mixing it with existing definitions on one hand, and designing new, on the other hand. The necessity of presenting the new definitions lies on the fact that they fit perfectly to our needs. In addition, we believe it is useful to establish clear and well defined terminology, as much as possible, before starting the empirical part of the study. We are also aware that there is no single exact ontology for any scientific field, and that this process is highly subjective.

Before presenting our own, hereby we point out how some authors define the terms in relevance to the study.

By the population, it is understood the complete collection of elements, where the element is a single member of a population. Differently, a study population or a sample is a set of elements from which the sample is collected, and which findings could generalize to whole population on one hand, and from which results we can inform about the whole. Eisenhardt says that "… the population defines the set of entities from which the research sample is to be drawn… controls extraneous variation and helps to define the limits for generalizing the findings" (Eisenhardt, 1989). Gerring (2004a) offers definitions of population, sample, and cases. A population is composed of a sample or studied cases, but also unstudied cases; a sample includes several units

which are observed at specific or determinate period of time; and a case can contain relevant variables which derive from observations. In addition, he perceives an 'unit' as "*spatially bounded phenomenon*" which is observed in a determinate moment or during a specific period of time.

For Long (2004), a unit of analysis, as the basic element of every scientific research is "… *the subject of study about which an analyst may generalize*". Robert K Yin (2009) considers that unit of analysis holds a research together. Other way said, generalizations or the findings are made on the base of unit of analysis. The unit of analysis is determined by three characteristics: social entities, time, and space. Social entities may include one observation, for example one person or one organization, or observations of group of persons or various organizations with the established relationships, like husband-wife or employer-employee.

The unit of observation may or may not coincide with the unit of analysis. Unit of observation is an elemental concept, is what we look at, like for example people in an organization, articles in content analysis, etc. It is a set of elements from which data is obtained. Sometimes, the unit of observation is the same as the unit of analysis, but not necessarily. For example, the unity of observation can be husbands and wives which could provide the information about unity of analysis- marriage.

Although in this kind of studies it is common that some constructs emerge as a result of the research, we present some constructs that we detected from the literature review and that are included in our proposed model and in the interview guide. Nevertheless, we are aware that those constructs are not definite, and that they might be modified, and more constructs added in the process of analysis of data.

Social Capital

Social Capital, resources have structural, relational and cognitive dimensions (Chang and Chuang, 2011). *Social capital structural dimension* assumes that structural facts as concerning social network system assets and relations, and describing the impersonal configuration of relationships in a community (Nahapiet and Ghoshal, 1998).It deals with the relationships between individuals and their connections with their communities. *Social capital relational* dimension is related to trust, and trust on social relationship

can influence people's behavior. In some studies, trust is one of the important social influence variables, which have been considered highly related to the virtual community. *Social capital cognitive* dimension provides knowledge sharing ability that helps in knowing the numbers of online topic messages, other people's knowledge and assessment of all information.

Concerning Social Capital, we consider that here is a direct effect of social capital on ICT because of the different level of acceptance, attitude towards ICT or use of many technologies by the employees, which is influenced by social variables. Also, social capital affects ICT through the second variable of our model, "*Knowledge Creation Process*", we consider that social interaction is a key element in the process of transforming tacit knowledge into explicit knowledge that finally impacts the use of ICT.

As a start point, we suppose a direct effect of social capital on ICT, this proposition is based on the observation of some organizations, working with ICT and on some evidence founded in the literature related to the influence of social variables on the implementation and use of information systems.

In order to measure this constructs in our research, we are selecting the instruments following the recommendations of Dudwick et. al. (2006), "Analyzing Social Capital in Context: A Guide to Using Qualitative Methods and Data. Edited by The International Bank for Reconstruction and Development/The World Bank.

We agree with the recommendation of the authors concerning the fact that the Integration of quantitative and qualitative methods in social science research can give better results by minimizing single-method biases and triangulating findings. As they acknowledge that such integration is not always possible in practice, they recommend to use the proposed guide in order to understand the relative strengths and weaknesses of each method. And use the right one for the best quality of research.

In order to measure social capital we will use Social interaction, Trust and Knowledge Sharing.

System Success and Acceptance Theories

According to the D&M model, user satisfaction measures user opinion of the IS. "*Perceived usefulness"* means ''the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context,''. It has been utilized in many studies to explore user

perceptions of system use, and has been shown to be a strong determinant of user acceptance.

Knowledge creation

In order to analyse knowledge creation, this research is based on the SECI Model of knowledge creation proposed for Nonaka (1998).

The most important variables to be analyzed concerning Knowledge creation are:

Tacit Knowledge, which is subjective and experience based knowledge that cannot be expressed in words, sentences, numbers or formulas, often because it is context specific. This also includes cognitive skills such as beliefs, images, intuition and mental models as well as technical skills such as craft and knowhow.

Explicit Knowledge, which is objective and rational knowledge that can be expressed in words, sentences, numbers or formulas (context free). It includes theoretical approaches, problem solving, manuals and databases.

Also the four sub processes of the SECO Model for Knowledge Creation:

Socialization. The process that transfers tacit knowledge in one person to tacit knowledge in another person

Externalization. The process for making tacit knowledge explicit.

Combination. Is the process that combines explicit knowledge in order to obtain new explicit knowledge.

Internalization. Is the process of understanding and absorbing explicit knowledge into tacit knowledge held by the individual. The internalization process transfers organization and group explicit knowledge to the individual, In this process, internalization of the new knowledge is also done through social interaction

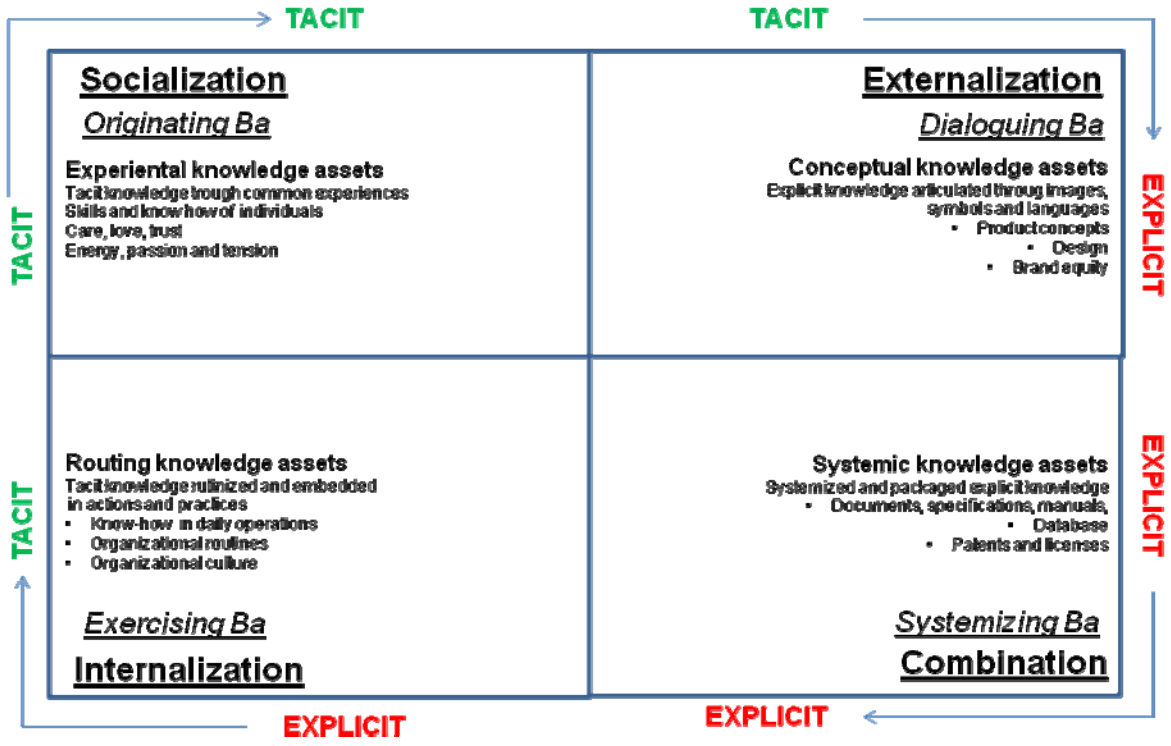

Figura 15 SECI Model of Knowledge Creation

Source: Nonaka; Toyama (2003)

For research reasons, we transformed the constructs into operational variables, in form of questions, so that we can, on one hand, test and explain relationships and values shared in the organizations, and on the other hand, we rested open-minded to explore other aspects relevant to this study that might surge/derive during the interviews.

2.4.6 Empirical research design

A clear define research questions is a bone of any empirical study. It represents a connection of a study to the practical and theoretical findings. The most employed research type questions start with 'how', 'what' and 'why', where a 'what' question is more common for studies that explore a new phenomenon (Dubé & Paré, 2003). Our proposed research question is:

what is the role of social capital in the use of information and communication technologies (ICT) on small and medium enterprises of Catalunya?

In order to answer our research question, an extensive literature review was done in order to find robust constructs that be helpful in order to understand the phenomena and test the model empirically. Based on the literature review; the observation of organizations and our intuition. The following model is proposed:

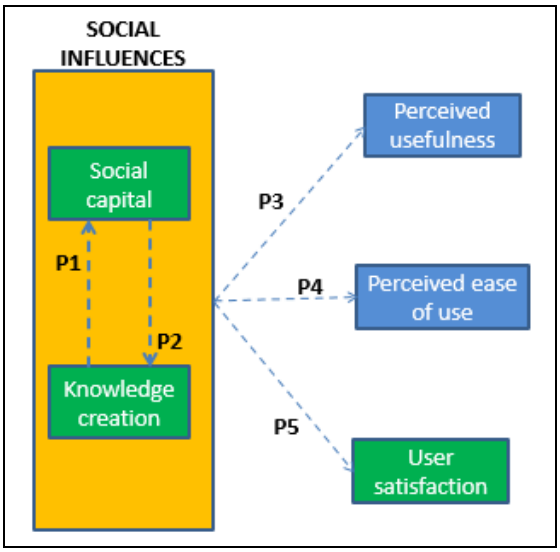

Figura 16 Hypothesis proposed to test SC-KC Information systems success model

Source: Elaborated by the author based on DeLone et al, 2003, Nonaka, 1998, Song, Y. et, al. 2009.

Propositions of the research

Our independent variables are embedded in the concept of social capital and knowledge creation. Social capital is related to three dimensions (structural, relational and cognitive) (Chang and Chuang, 2011). The structural dimension is concerned by relationships and interactions of users. The more social interactions are built, the greater cooperation and more effective communications among users are in a community (Nahapiet and Ghoshal, 1998; Lin and Huang, 2010). The relational dimension shows a common concern and mutual trust, defined as agreeableness on and get along with others and by others. Individuals in high degree of trustiness are kind to others, more cooperative, and have effective communication. Trust is considered one of the predictors of social interpersonal relations, adjustment, and performance (Good, 1988). The cognitive dimension is related to knowledge sharing and can increase the likelihood of understanding among individuals because allows them to communicate their knowledge as a result of knowing what they can receive from other people. Besides, how much knowledge is shared and how high quality of knowledge individuals exchange are considered essential for effective outcomes of teamwork. Consequently, cognitive social dimension provides to identify, analyse, and transform useful information into reusable knowledge which can be used to make decisions. As we can see, social capital could promote cooperation, knowledge sharing, a more efficient communication, a higher level of information and knowledge exchange, and teamwork. For these reasons, the next present the next propositions to be analysed through semi structured interviews in the selected cases:

Specific proposition 1: Has social capital a significant effect, on the "knowledge creation process"?

H1: The higher an individual´s social capital in an organization, the greater their contribution to the "knowledge creation process" of their group in the organization.

Specific proposition 2: Has the "knowledge creation process" a positive effect on social capital?

H2: The stronger the "knowledge creation process" is in the group, the greater their contribution to the social capital of individuals belonging to the group.

Specific proposition 3: Has the “social capital-knowledge creation process” system a positive effect on the variable (“perceived usefulness”)?

H3: The strongest the “social capital-Knowledge creation process” system, the greater the perceived usefulness with respect to the ICT used.

Specific proposition 4: Has the “social capital-Knowledge creation process” system a positive effect on the variable “perceived ease of use”?

H4: The strongest the “social capital-Knowledge creation process” system, the greater the perceived ease of use with respect to the ICT used.

Specific proposition 5: Has the “social capital-Knowledge creation process” system a positive effect on the variable “User satisfaction”?

H5: The strongest the “social capital-Knowledge creation process” system, the greater the user´s satisfaction with respect to the ICTs used.

Before starting the empirical part of work, we ensured that we have clear the answers for our investigations. We followed the steps for a case study, proposed by Robson (2002) which consist of:

Table 5 Steps for case study

• Objective—what to achieve?	To refute the impact of SC on ICT perceived usefulness
• The case—what is studied?	SME´s in Catalonia (Health, Food, software)
• Theory—frame of reference?	Defined in theoretical foundations
• Research question—what to know?	Defined on Methodology
• Methods—how to collect data?	Semi structured Interview, observation, and documentation
• Selection strategy—where to seek data?	Snowball technique

After establishing precisely, the structure of the field study, we proceeded defining the field research design. Selecting cases is based on their theoretical importance or their relevance. Case study research is compatible with various theory approaches. "*The case study research design comports with any social-scientific theoretical framework including behaviouralist, rational choice, institutionalism, and interpretivism*". (Gerring, 2004). In multiple-case design, Robert K Yin (2009) considers that the selecting process should take a line of literal or theoretical replication logic. In the first, it is possible the prediction of the similar or identical findings, meanwhile in the later it is opposite- prediction of the different findings.

Sample

Our research is focus on Small and Medium Enterprises of Catalonia that use information and communication technologies. In order to select our sample, and make it more homogeneous we decided to select three sectors that share common characteristics:

1. Use of information and communication technology.
2. Strategic sector.
3. Innovation and process improvements are vital for them.
4. Companies declare to be interested in process improvement and/or innovation based on technology use.

Companies have been selected also because of easy access to them, however, the main characteristics of every company have been considered in order to have a homogeneous and representative sample.

Finally, it was decided to conduct our study in the following four sectors: health, food and software. Therefore, six enterprises were selected, in each enterprise four semi-structured Interviews were done during the period marzo-diciembre de 2016..

Table 6 Sample selection for interviews

SECTOR	Number of interviews
Health	8
Food Industry	8
Software creation	8
Total	24

Sample size

As commented by Small (2003), many researchers reluctant to agree to the option of small samples because it seems to imply that all interview-based studies should involve large samples. “While such large studies are valuable, there is a place for a small interview study to make meaningful contributions to knowledge, provided the language and assumptions through which it is interpreted”.

As our objective is to detect as much variables as possible and try to relate them, the best option for us is the use of semi-structured interviews. Even if we have a small sample, as we will use the theoretical bases obtained from our literature review to provide a language and assumptions that let us analyse the information, we consider that the research validity is assured.

Selecting cases may be seeking to identify valid causal relation. Thus, " … *good causal research begins by identifying an important and compelling research question. This question often is then transformed into testable hypotheses by clearly delineating variables and their potential values. Equipped with these resources, we have argued that case selection provides a strong and crucial, but all too often ignored, foundation for validity identifying causal relationships and generalizing those findings to other cases*" (Mitchell & Bernauer, 1998).

There is always present a question of 'ideal' number of cases. There is not academic consensus about the issue; it all depends. In some cases, one case study could be enough, like in the situation of corroborating of an existing theory. When thinking about 'ideal' number of cases for a study, one should keep in mind the limited recourses, especially of time and money recourses, and that it is necessary to maximize benefits from both – maximize data/information, and limited time/money situation.

2.4.7 Data collection methods

The first phase included a literature review. In the second phase a semi structured interview was designed, the first semi structured interview was revises and modified in order to capture in a better way the information related to the variables we are interested in.

Along this research four subjects (pilot interviews), plus 24 more subjects were interviewed and the interviews were recorded, after that the tapes were listened carefully and the information was passed to written version in order to proceed to the analysis.

The data collection process consisted in the presence of the researcher in every SME´s and a semi structured interview were recorded. For the interview, the guide interview was used only as a reference, given that it was a semi structured interview and the main objective was to get the more information possible related to the subject of study. Depending of the situation the interviewer did the more convenient question.

If some topics were not touch by the interviewed, the researcher used questions included in the interview guide. The objective was that in the measure of the possible all topics included in the interview guide were commented by the interviewed.

The process of data collection determines how the information will be gathered, and is very important as it gives/talks about credibility and validity of results. Multiple data collection approach normally employs more than one techniques of data collection. It provides " *a richer look at the phenomenon under investigation*" (Kirsch & Cummings, 1996). Robert K Yin (2009) distinguishes four collection methods in qualitative type of researches: interview, documentation (archives), (direct) observation, and physical artefacts. Questionnaires and survey are other data collection methods frequently used in sociology. They, however, involves statistical representativeness. Getting back to Yin's classification, the use of various methods of collection or triangulation of data can be very useful, as it information of various sources tends to assure greater credibility of findings. There are also field notes, considered sometimes as observation, are the valuable source of information, that may be in the form of verbal or nonverbal communication, as well as details of the context of the conversations .

There are three types of interviews: open-ended or unstructured interviews, semi-structured, and close-ended or structured interviews. In qualitative sociology are very present open-ended interviews, and interviews conducted in-depth, and they both usually involve a small number of participants. Semi- structures interviews, which are also frequently used in the mention disciplines, balance the preplanned questions of a structured approach with the spontaneity and flexibility of the unstructured interview. In the semi-structured interviews, the researcher prepares questions and/or discussion topics in advance and generates follow-up questions during the interview. The closed interviews include closed questions.

Gathering the documents, in the form of textbooks, newspapers, e-mails, may be valuable source of information. It is considered as a raw material, and it might be very useful method for describing, understanding, and interpreting the setting of a group, or in this case, the organizations that are under the investigation.

Field notes are the observational records that provide detailed, objective, and explicit description of the phenomenon that have been observed. Field notes include exhaustive description of the context or social setting. This method also tries to capture

the participants' behaviour and his expressions, that might be valuable for later analysis of their deeper values and beliefs.

In-depth semi-structured interviews were used as our primary data collection tool in the research. The interview is designed of two principal topics. The questions are thoughtfully formulated, so they can serve in the pursuit of information regarding the study on hand. The interview passed through the phase of piloting, which clarified and sharpened its form, before being carried out on purposively selected cases for this research. The interview guide was on Spanish language.

All interviews were tape-recorded, and saved under the corresponding code names. The parts that have been considered relevant to this study, were transcribed, and saved with corresponding codification.

2.4.8 Data analysis

Clear and meticulous descriptions of analytical process are crucial for objective interpretation of findings, and certificate the respect of systematic and rigorous scientific practice. That's why it is necessary to explain and describe in detail how the data was analysed.

There is a danger in data analysis if the data is oversized, as it might produce a "*death by data asphyxiation*" (Pettigrew, 1988), and in order to avoid it, researchers may use within-case analysis. Using this approach, they get to know each case at hand in detail and creating concrete patterns might allow them to generalize them (patterns) other cases.

Cross-case comparison is a tactic that impedes researchers to fall into premature or false conclusions as they process data. Researcher can choose between selecting categories or dimensions, in order to search simultaneously, within-group similarities and differences; selecting pair of cases, and look for similarities and differences between each pair; or selecting the data by data sources until reach the saturation of the analysis. After the confirmation of the pattern by another case is achieved/ derives from another case, the results are stronger and better grounded.

Coding data- serves for reduction and summarizing data, so that it would be easier to perceive the connection between the theoretical model and the codes. Usually, it is present in early phase of analysis.

There are specialized software tools available to support qualitative data analysis. For example, *NVivo* and *Atlas* are qualitative text analysis software's.

Mode of analysis – is how data are analysed and interpreted. Robert K Yin (2009) talks about general analytic strategy that determines what is to be analysed, and for what reason, in particularly for testing and developing theories.

At the beginning of the data analysis process, cases are decomposed into variables; the ideas and evidence occur through variables. Then, researcher should put them into a corresponding context, so he can understand them, and ultimately, make an interpretation.

3. ANALYSIS OF THE PILOT CASE INTERVIEWS

In this section we show the results obtained from the pilot case. As one part of this study has an exploratory character, we decided to follow Robert K Yin (2009) advice, and conduct a pilot case in order to test the interview guide, and to adjust instruments data collection, if necessary, and to establish clearly what the unity of observation is. A part of clarifying technical parts of the interview guide, the piloting served us for practicing, gaining confidence, and to eliminate shyness. The information obtained from the pilots was not considered for any type of analysis. The pilot cases had only two missions, and that is to prepare the interview guide, so that we can collected for us valuable information, and for the perfection of researcher's interview skills, so that she can face any unexpected situation that might surge during the interviews.

The four semi-structured interviews for the pilot case were done in a company from the Region of Barcelona, Spain. From September to December of 2014. The company pertains to the manufacturing sector and it is part of a multinational enterprise. It has around four hundred workers organized in the following departments: engineering, production, quality, sourcing, supply chain and management of projects. The company has a small team of people in charge of EIS support and development of simple applications, for the rest of needs related to information systems and computers support the company uses external subcontractors.

The company uses several Information and communication technologies, as for example an Enterprise Information System SAP R3, it was implemented 10 years ago. Many other customized systems are being used in order to cover several needs that SAP system do not cover (data bases for delivery notes, data bases for engineering drawings, applications to retrieve and process information from SAP system, chats, etc.

The company declares to have innovation as one of his main goals. In fact, five years before a new department called "research and development" was created, but it was closed on the year 2018. Since a few years ago the company has started several programs aiming to promote creativity, work improvements and innovation.

Approximately 60% of the workers do not have bachelor's degree but they are qualified workers, 20% are not qualified workers and 20% own a bachelor's degree, most of them related to engineering.

Four semi-structured interviews were done by the same researcher and were based on an initial guide designed with the information obtained from the literature review.

- The first interview was done to a person belonging to the “Industrialization department”, this department is in charge of the analysis and creation of industrialization documents and processes. The paper of the interviewed person is the analysis and design of the industrialization of the product. He has undergraduate studies in electricity and has 20 years of experience in this field. He has been in the company for 7 years, four of them in the production line and the rest in the present position.

- The second interview was done to a person belonging to the product engineering department; this department is in charge of the analysis, design, and test of the products. The paper of the interviewed person is the development and improvement of products designed for the company or bought to suppliers. He has a bachelor’s degree in mechanical engineering, has been five and a half years in the company and in the actual position he has been two and a half years. As this company is part of a multinational company, much of the design of its products is done outside, however many adaptations, improvements or changes asked by the clients, are done by this department.

- The third interview was done to a person in the supply chain department which is in charge of the management of materials needed for production: raw material, special equipment, tools, etc. This department is in charge of warehouses, stocks management, transport of materials and finished products, etc. The paper of the interviewed person is the improvement and optimization of internal and external logistic processes. He holds a bachelor’s degree in industrial engineering and has been in the company for 10 years, five of them in the department of industrialization.

- The fourth person interviewed was a project manager, who is in charge of one of several projects sold to the clients and is the link between all the departments of the company and the final client. His paper is the management and coordination of the Project. He has a bachelor’s degree in industrial engineering. He had been in this position for 10 years, during this time he has been in charge of 5 big projects. He has been in this company for 30 years.

Because of logistic reasons, two interviews were done outside the company (production methods department and project manager) and two inside the company (supply chain and, engineering of product department).

It is very important to mention that besides the four interviews, many days of field observation were used and are a key point in order to analyze the interviews. Also, access to several documents as presentations, public documents, etc.

All the interviews were taped, after that, in order to be codified and analyzed using BNML (Oliveira & Ferreira, 2011), the interviews were listened several times and key sentences related to our constructs, variables and theories, were copied into the first column of an excel file(see figure 12 Annex C). In every one of the next columns of the excel file, concepts or variables related to the sentence, were put (one per column). This tape of arrange of data is very useful in order to let us to play with data and be able to analyzed in a visual way (see figures 6 and 8).

Once all relevant sentences were put in the excel file and all relations were linked, data is arranged according to our needs. In figure 6, we can see the data corresponding to every person interviewed, his roles in the company, the activities he does and the kind of knowledge he is able to create using ICT and other company assets.

We can see that many of the activities are very related to ICT in a direct or indirect way. Also, we can see that knowledge is generally created. In table 7 we can see the relationship between every one of the persons interviewed, the ICT tools he uses and the knowledge created. In figures 8, 9 10 and 11 we can see the relationship between the interviewed and the different roles and activities he does.

All this visual information is very useful in order to detect common patterns and relationship related to our constructs and proposed model. The BNLM methodology was very useful in order to classify the material and create several tables and drawings that are very useful to understand the results. However, as our proposed model has changed, data obtained from the last 11 interviews must be re analyzed.

Eventhoug BNML seems to be very useful in order to relate concepts, in order to evaluate the dimension of every variable, it is necessary to listen at the interview and use the contextual information.

Based on the four pilot interviews, the semi structured interview was done.

Results of pilot interviews.

According to the data we have processed we can see that:

- The social capital variable “trust” positively influences the knowledge creation process.
- The social capital variable “trust” positively influences perceived usefulness.
- Social interaction and knowledge creation positively influences perceived usefulness.
- Knowledge sharing positively influences perceived usefulness.
- Social interaction positively influences the knowledge creation process.
- Knowledge sharing does not show any influences on the knowledge creation process.

At the end a total of 24 semi structured interviews plus 4 pilot interviews were done.

4. THREE CASE STUDIES

In this chapter the results of the three case studies are presented and analysed.

The first case study was conducted in the sector of health. Two Small and Medium enterprises were selected in the area of Barcelona. Four “semi structured interviews” were done in each enterprise, to personal that uses “information and communication technologies” in their daily work. It was intended to interview people working in all levels of the organization to have a complete picture of the phenomenon under study.

The second case was conducted in the food sector. It was made a contact with two small and medium enterprises located in Cataluña, one of them located in the area of Barcelona and the other outside Barcelona. Also, four “semi structured interviews” were done in each of the two enterprises to personal that uses “information and communication technologies” in their daily work. The idea was to interview people working in all levels of the organization, to have a complete picture of the phenomenon under study.

The third case study was conducted in the Software sector. Two Small and Medium enterprises were selected in the area of Barcelona. Four “semi structured interviews” were done in each of the two enterprises to personal that uses “information and communication technologies” in their daily work, which we could say is almost everyone in the company. We intended to interview at least to one person of every level in the company.

4.1 First case study - Health

4.1.2 Introduction

The health sector includes people, institutions and resources, organized following established policies that have as an objective to promote, restore and maintain health. In this sector are included government ministries and departments, hospitals and other health services, health insurance companies, voluntary and private organizations in health, pharmaceutical industry and drug sale companies. In many countries, private not-for-profit health care providers constitute an important part of the health sector.

Health sector is responsible for providing production and marketing of products and services required for protecting, remedying, and preserving health. This sector covers diverse areas such as (Kemal, 2013):

- Ambulatory and stationary treatments are the main areas which are offered in hospitals, institutions in which precautions against illnesses are taken, rehabilitation centres, nursing-care centres, doctors' surgeries, and pharmacies.
- Pre-service and supplier industries such as pharmaceutical industry, medicine and gerontological technology manufacturers, and biotechnology and genetic engineering services.
- Retailers and wholesalers of medical, orthopaedic, and artisan products necessary for health.
- Sectors close to the health sector including health tourism, spa and wellness, sports, and leisure activities.

As institutions included in health sector we considered: hospitals, houses and hospitals for elderly people, health insurance companies, doctors, pharmacies, nursing care facility, biotechnology companies, and medical technology companies.

There are many occupations considered in the health sector, between them we can mention: doctors and dentists, medical (laboratory) assistants, masseurs, midwives, nurses for handicapped people, health engineers, pharmaceutical production engineers, pharmaceutical-commercial employees, cleaning and kitchen staff in health institutions, courier services for pharmacies, pharmacists, non-medical practitioners,

physiotherapists, nurses' assistants, health care technicians, employees in therapeutic professions, dieticians, nurses, medical bath attendants, nurses for the elderly, social workers.

Health sector is one of the most important sectors in any country, also it is one of the sectors that most money receives from governments. As many European societies are getting older, it is expected that the investments in health will increase. Cataluña is in the same scenario, so any improvement in this area with objective to optimize and reduce expenses it is desirable.

Information and communication technologies are having an important effect in all sectors, technology is changing our lives. The sector of health is been very impacted by technology, in this context it is very important any research related to the impact of ICT on health organizations and how this technology could help to get any kind of improvements.

4.1.3 Methodology

Eight semi-structured interviews in two companies of the health sector (four per company) were done for this research.

Four semi-structured interviews have been done in the company that we will call "A" (for confidentiality issues). The company has around 60 employees and it is located in Barcelona, Spain. It is dedicated to the nursery of elderly people business. Most of workers are nurses, Physiotherapists, and administrative workers (staff). All interviews done have been transcribe into word, the most important ideas were selected and passed to a excel database, where they were they were classified and linked to the concepts extracted from the literature review and with data extracted from other interviews.

Four more semi-structured interviews were done in the company that we will call "B" (for confidentiality issues). This company has around 50 employees in one of the hospitals and 30 employees in another, both hospitals are located in Barcelona city. This company is dedicated to the health business, nursery of elderly people. Most of workers are also nurses, physiotherapists and administrative workers (staff). In this case most of the interviews were done in the hospital; however, for logistic reasons some interviews were done outside the hospital. As in the other case, all interviews

done were transcribe into word, the most important ideas were selected and passed to a excel database where they were they were classified and linked to the concepts extracted from the literature review and with data extracted from other interviews.

The methodology used in this case is explained in detail in the methodology section of this research. In the next section field research procedures and methods applied are presented.

4.1.4 Field research

The interviews were conducted between January 2014 and December 2015. In the Annex B, you may find the table of all interviews.

As we mentioned before, prior to the interview, a pilot interview was done in order to verify the adequacy of the interview guide. Once the interview guide was approved, the researched established contacts with persons of the companies. For this part a snow ball method was used, it means that the researcher contacted the first interviewed and this person recommended a second interviewed. Fort his part, the researcher tried to get access to the levels he was interested.

Some interviews where done outside the company, because of logistic reasons and for the comfort of the interviewee.

4.1.5 Characteristics of study participants

As mentioned before, in this case eight semi structured interviews were done.

Table 7 Characteristics of interviewed participants in health sector

Health								
INTERV. CODE	AGE	GENDER	STUDIES	POSITION	LEVEL	TIME IN WORK (Yr)	EXPERIENCE (Yr)	INTERVIEW DURATION (mins)
Ha1	45	female	technicien	nurse	Medium	11	20	43
Ha2	38	female	technicien	therapists	low	10	8	39
Ha3	28	male	technicien	Staff	low	3	5	29
Ha4	38	female	technicien	nurse	low	10	15	45
Hb5	55	female	technicien	Administ	Low	10	15	40
Hb6	55	Female	technicien	Administ	Low	6	18	35
Hb7	25	Male	technicien	Administ	Medium	1	1	38
Hb8	44	Male	High	Director	High	6	20	58

4.1.6 Results of interviews

In the health sector case are analysed three major topics that include: social capital, knowledge and information and communication technology. Each of the three mentioned themes consists of the most relevant and related variables that were included in the interview guide. These variables were used with the objective to explore how organizations in the health sector and their employees manage these topics. From the interviews it was obtained rich information that enabled the following analysis.

Social capital

In this part the most relevant topics of social capital are analyzed, including working environment, working environment change, teamwork, collaboration, knowledge sharing, friendship, trust, communication.

Working environment[8]

The data obtained from two companies of the area of health, point out that there is a lot of pressure from the top-level employees onto bottom positioned employees, meaning that through the organizational (pyramidal) structure flows one clear message, and that is that work must be done at any cost. At least, the interviewed employees perceive it in that way. The consequences of such companies' policies on their employees are mainly negative. In the next testimonies, employees use terms like stress, anxious, accumulation of work, lack of understanding from the part of executives of the company.

The first interviewee says that stress is due to excess of work on one side, and ICT that does not work properly on the other side:

[8] Work environment refers to everything that forms part of employees' involvement with the work itself, such as the relationship with co-workers and supervisors, organizational culture, room for personal development, etc. A positive work environment makes employees feel good about coming to work, and this provides the motivation to sustain them throughout the day. Some factors related to good working environment are: Transparent and Open Communication, Work-Life Balance, Training and Development-Focused, Recognition for Hard Work, Strong Team Spirit.

> **(Hb6):** “He tenido las situaciones de estrés y de ansiedad, ahora en los momentos puntuales. A veces porque el sistema no responde..., antes mas cuando trabajaba el turno de la mañana, sobre todo porque era imposible de sacar el trabajo que me pedía, era imposible”.
>
> **(Hb6):** “I have had situations of stress and anxiety, now in specific moments. Sometimes because the system does not respond ..., before more when I worked the morning shift, especially because it was impossible to get the work that I asked for, it was impossible”.

The next interviewee sustains the opinion of the first one, adding that because of the excessive amount of work, she is obliged to work more hours, for which she is not paid:

> **(Hb5):** “Es duro este trabajo. Ahora tengo que ir para terminarlo. Y eso, no es que hay mucha gente,.. Tengo que hacer unas programaciones que a veces me cuesta llegar. Y tengo que hacer más horas y sí, me estreso un poco. En principio, estas horas de más, no se pagan. no. no. no, porque te dicen que esto se ha de acabar pero tú no lo puedes acabar… (ríe)... Este sitio en donde estoy, todo el mundo ha tenido problemas. Es bastante estresante debido al trabajo que hay. Yo quiero cumplir mi horario, hago alguna vez media horita de más, pero tampoco mucho más. ..Y por eso voy mas estresada porque... yo tengo bastantes cosas que hacer en casa y entonces, trato de cumplir mi horario. Pero tengo que ir corriendo. Y en promedio me quedo unos 20 minutos diarios”.

The same story repeats another interviewee. She reaffirms the previous testimony, highlighting overwork hours that are not recognized, and therefore not paid:

> **(Ha2):** “Actualmente no me da tiempo para buscar así que todo lo hago en el tiempo libre y en algún tiempo en la casa, pero prácticamente en el trabajo no, no te da tiempo, a mi al menos no me da tiempo ni para descansar. Mis quince minutos del desayuno si, la media hora que no nos pagan también lo cumplo, pero no me da tiempo”.

Same, as the previous interviewees, the following one points out the incompetence, or maybe even simply ignorance from the executive part of the company to plan activities. The interviewee considers that this non-existence of properly organized work usually ends in accumulation of work and corresponding problems:

> **(Hb8):** "… Quiero decir que algunas veces la empresa no tiene clara la película pero nosotros debemos sacar el trabajo. Eso es algo que siempre he comentado a los jefes. No me agrada. Por ejemplo, ha pasado que un departamento olvida hacer algo y por cooperar lo debemos hacer nosotros, pero claro, una vez lo entiendo, pero ha pasado muchas veces y los jefes no lo resuelven".

The same interviewee furthermore claims that her company insist on team work and cooperation, only on a view that in the situation of excess of work, the employees would feel forced /obligated to help out their fellow-colleagues. She says that the company plays on a card in which friendship between employees (exploited opportunistically by the company) contributes to higher productivity. On the other hand, it incites the sentiment of injustice and unfairness of employees, as it is not compensated economically or otherwise, and in some cases, it does not even correspond to their work task or job positions:

> **(Hb8):** "La empresa insiste mucho en la colaboración y el trabajo en equipo, de hecho la misma empresa realiza algunas veces al año actividades para que los trabajadores convivamos. Mínimamente organizan alguna reunión en verano y otra a fin de año, después va quien quiere, no todos suelen ir, pero si la mayoría. La colaboración también la promueven, en este sentido tengo mi opinión porque para los jefes es fácil decir que se debe cooperar siempre con los compañeros y muchas veces terminamos haciendo trabajo que no nos toca, solo por cooperar para que el trabajo salga bien".

The issue of lack of human resources is yet another element that has become a common way of work for this companies:

> **(Ha2):** "… porque hay momentos donde falta personal y se lo pasan por encima, en los primeros meses se aplicaba de que falta personal…".

There are several issues that appear in this part. First, there has been noticed that there are some organisational problems, which leads to accumulation of work. In that situation, sometimes surges a sentiment of impotency as the work cannot be carried out in the regular working hour. The anxiety is not permanent, but the sense of unfairness is continuous because the work done out the working hour is not recognized, and therefore is not paid. The existence of friendship between the employees is what the companies exploit. In the situation of accumulation of work, this mean that the employees are willing to help out their fellow-colleagues, even if they think it is not fair to work for free. This situation looks like a circulus vitiosus that could be fixed by changing the logic of work planning, but that decision depends entirely on the managers of the companies. Unfortunately, there was not opportunity to interview some managers, so there cannot be presented more information related to this matter.

Working environment change

Work environment vary from company to company. Even in one company, it is not unusual the change of work environment, which often passes when there is a change of executive staff. In the next testimony, it can be appreciated that this type of change has been evaluated as, generally as positive:

> **(Ha2):** "Actualmente ha habido un cambio de dirección desde hace dos años, si no me equivoco. En la anterior sí que había muchas barreras y muchas limitaciones, y este cambio de directora nos ha venido bien a toda empresa. La directora ahora escucha mejor a los trabajadores, quiere que la atención a la

> gente mayor sea mejor y eso quieras o no se notó. La anterior directora veía más el tema económico, de sacar más la faena con los que estén".

But, the same interviewee acknowledges that the working environment can be, and in her company is, hostile between two groups, on one side, physicians, nurses, and social workers; and on the other side, staff that take care of hygiene issues of the residents. The interviewee herself, being the part of the second group, feels misevaluated by the first group:

> **(Ha2):** "En el área técnica están todos los que están diplomados, enfermeros, médicos trabajadores sociales y luego está el área que cuida a los ancianos que es el área de gerocultoras. Ahora mismo veo como un choque entre la parte técnica y la parte de gerocultoras. Los primeros no valoran el trabajo de las gerocultoras y estas no es que no valoren, sino que se ven criticados y siempre como que por debajo de los técnicos, pero los técnicos lo marcan encima más, entonces normalmente en estas residencias existe esta división y actualmente según que actitudes tengan los técnicos, aun persistirá."

In the next interviewee indicates that the old executive staff got a prize on quality without deserving it. She affirms that managers used to show on papers a better situation than the real situation of the organization. It was very shocking for her and made her think that papers are more important that the real work. These kinds of situations de-motivate people, because they perceive that the only important thing in work are indicators, they don´t feel that the real work is really important and appreciated for bosses; thus, any bigger effort to improve their work may not be recognized if it is not well registered on indicators, also people may perceive a wrong message, that it may be easier and more productive for them to improve indicators on papers that to really improve the work they are doing.

> **(Ha2):** "El director anterior, ganó un concurso de calidad, pero a base de haber escrito de papeles, cuando realmente la calidad no estaba en el día a día. Entonces como se premia la calidad de una residencia solo si se ha escrito que lo hacen súper bien. Y entonces eso me choco mucho, ¿cómo esta empresa ha ganado un concurso de de calidad?, cuando si yo estoy trabajando y veo

> que esa calidad no existe. Pero en los papeles estaba súper bien escrito y redactado y ganaron el concurso y ves esas cosas y piensas que lo que está escrito vale más que los ancianos".

The perception of work environment is influenced by the work contract that one employee has. The interviewee claims that the company uses it as a tool to manipulate, and that not only affects work environment in general, but personal relationship between employees as well. She admits that is difficult to work with colleagues that have that so-called pity type of work contract:

> **(Hb6):** "Hay más tensión dependiendo que tiempo de contrato uno tiene, la organización siempre va en esa dirección y eso crea mal ambiente. La calidad de servicio no ha cambiado sino las relaciones interpersonales entre los compañeros. Si a uno le han reducido los horarios está enfadado porque uno ha de enfrentar ciertos gastos mensuales y tiene ciertas perspectivas y que te recorten el salario genera tristeza y también es difícil trabajar con unos compañeros que tienen un tipo de contrato que da lástima.

Despite of aforementioned testimony, some of the interviewees evaluated their work environment as pleasant, stress less, and overall, positive:

> **(Hb5):** "Ambiente es agradable; podemos algunas veces cambiar con alguna compañera su turno, horario flexible; en principio no hay estrés y ansiedad. Lo tomamos con calma,…".

The next testimony shows the trajectory that company passed from one to another administration, which had a great impact on work environment; going from hostile to pleasant work environment:

> **(Ha3):** "Con los jefes la relación es formal, al menos desde que entro la nueva empresa, anteriormente era más informal y a veces un poco agresiva de los jefes a los trabajadores, pero con la nueva empresa la relación con los jefes ha mejorado. Con las compañeras es un poco menos formal, pero yo intento que sea lo más formal posible, no quiero tener problemas personales con la gente. Anteriormente he tenido malas experiencias por tener relaciones muy informales con las compañeras, no todo el mundo sabe distinguir entre trabajo y amistad. En general diría que el ambiente es regular".

Some persons prefer to concentrate their attention on the bright side, as it is the case of the next interviewee. He presents his company´s work environment in exclusively positive light, in which he perceives pleasant ambiance, fair treatment from the administration, and in which fellow-colleagues and their superiors have good quality interpersonal relationships:

> **(Hb7):** "… el ambiente es muy formal, es una política de empresa el relacionarnos de la manera más formal y correcta posible en el trabajo. Según mi experiencia la gente es muy correcta, tanto entre colegas como en la relación entre jefes y subordinados. … en general hay muy buen ambiente laboral".

In the following testimony, the interviewee contradicts himself: first he says that the company experienced positive change since they have a new administration. However, he also says that new problems appeared and that created new conflicts. It is clear that it is not easy to etiquette the working environment as positive and pleasant, without prejudice. There are almost always some details, situations that shadow it:

> **(Ha3):** "Con los nuevos jefes la relación es más bien formal y correcta, en ese sentido la nueva empresa ha mejorado mucho. Parece haber un poco más de interés de su parte hacia los trabajadores, nos escuchan un poco más y al menos han traído más material y algo de equipo. Seguimos teniendo problemas y alguno que otro conflicto, por ejemplo en tema de horarios, nos han cambiado los horarios a la mayoría y en algunos casos de manera casi arbitraria, yo por ejemplo siempre trabajé por la noche y hace 6 meses me asignaron el turno de la mañana, lo cual no me beneficia, me quejé, pero no pasó nada".

In the part of work environment have been noticed several different views. On one side, there is a perception of pleasant, stress less, and overall positive work environment, and the management of the organisation is seen as a major factor that defines this organisational climate. On the other side, there is a feeling of unfairness and, in some cases perception of segregation. The last two qualifications caught our attention. A feeling of unfairness that influence work environment negatively is attributed to precarious work contracts that put some of the employees in inferior position than the others that enjoy stable work

contracts. Both groups feel uncomfortable with this situation. Another element that negatively influence a work environment is the existence of clusters that are presented as, more or less, confronted. These clusters are divided in two groups: members of the first group occupy upper-level positions (due to their higher education), while the members of the second group (who are less prepared) occupy the lowest positions in the organisation. It seems that the major issue of confrontation between the mentioned groups is related to respect, or more precisely, lack of respect of the first to the second group of the employees.

Social capital /Teamwork/collaboration/ sharing knowledge

In this part the facets of team work are analysed. First, it is observed that all interviewees work in teams. In some cases there is closer collaboration than in others. This means, that some of the interviewees are interdependent of work of their colleagues, some are more autonomous in their everyday work. However, they all say that their work, in some level, depends, or is connected, to the work of others.

It is not unusual that somebody says that is totally independent in their work, and later, indirectly admits that collaborates with their colleagues. That is the case of the next interviewee:

> **(Hb5):** "No trabajo en equipo, pero sí que tengo contactos con otras compañeras".

In the next quote she indirectly says that there is cooperation, because the same fact that people is able to change working shifts and the affirmation that there is an agreeable working environment makes us think that cooperation is present:

> **(Hb5):** "Ambiente es agradable; podemos algunas veces cambiar con alguna compañera su turno, horario flexible; en principio no hay estrés y ansiedad. Lo tomamos con calma,…".

Also in the next quote she affirms that bosses use to listen and support people, which also imply certain degree of cooperation.

> **(Hb5):** "Aquí tenemos una muy buena directora. Aquí te escuchan…. te dirán que lo hagas, eso es seguro. Pero creo que no te dicen que no hay realmente recursos para hacer esto. Si quieres, lo haces. Pero tú solo te apañas. Eso es bueno, que te apoyan".

Other interviewees respond directly they work as team members. However, the way they describe that work, is perceived more as an obligation. The interviewee use terms such as, I must collaborate or I have to ask, to describe team work in her company. This is not perceived as a voluntary act by the interviewee, but rather as something imposed from outside:

> **(Hb6):** "Mi trabajo es más bien en equipo. A ver, hay parte que no,... pero claro luego, es en equipo porque tengo que colaborar con la gente que programa y muchas veces me pregunta, entonces y luego con los técnicos que realizan las pruebas. Tengo que preguntar…".

Their answer may be interpreted in two ways, by one side it could be understand as an obligation imposed by the company in terms of internal rules or needs of the work. On the other side it could be understand as an obligation produced for the desire of the interviewee to do their work in the best possible way, and given that the organization is not efficient, she must get help from others, even if she considers that she should not do it because that situation is produced by organizational inefficiencies.

The following testimony presents other dimension of team work, which includes supervision. The interviewee says she and her colleagues generally master their work tasks, but in specific situations or when there is a problem, they need to ask for assistance to their supervisor. This assistance is also interpreted as a form of team work or collaboration:

> **(Ha1):** “Nos supervisa la responsable de higiénico sanitario, pero ella solo interviene cuando hay caso que escapa de nuestras manos, pero normalmente cada uno sabe las funciones, y pedimos ayuda cuando hay algo que falla”.

In the example of team work offered by the next interviewee, it is observed a clear contradiction. The interviewee says they work as a team, but then she mentions a social worker, who apparently is also member of a team although he really does not collaborate, and is considered as an individualistic. Then she affirms that the problem is that there is no team, and therefore no team work. In this case, it is difficult determinate weather there is actually collaboration between the employees, and if there is, in which measure. Nevertheless, we are inclined to interpret that there is at least some level of team work which functions despite of many problems that it has:

> **(Ha4):** “Si, normalmente si trabajamos en equipo, se reúne el equipo y trabajamos en equipo. Excepto ya te digo, ahora es un poco el problema el trabajador social, el sistema que el usa, el ve su manera de trabajar, lo suyo. Pero yo le digo que hay más gente en el equipo, pero él dice que ese no es su problema, la organización no es mi problema, dice. Entonces es individualista. Muchas veces nuestro mayor problema es ese, no hay equipo”.

Sometimes there are some obstacles which impede the collaboration between the employees. These impediments surge for different reasons, but frequently they are connected to belonging to different clusters or occupying a lower or upper position in organisational hierarchy. The next testimony exemplifies it clearly. She works in a small health centre and in a hospital. Although the both places belong to the same company, work organization seems to be different. Thus, the interviewee points out that there are differences in collaboration in the health centre and the hospital. One could expect or imagined that there would be better collaboration between the employees of different departments in the small health center than in the hospital, due to smaller space and minor number of employees. But, curiously, the interviewee affirms that it is quit the contrary. She claims that there is more collaboration between nurses, midwifes and gynaecologists in the hospital:

> **(Hb6):** “En este centro es cerrado - poca colaboración entre diferentes unidades. En el hospital en el mismo nivel, considero que hay más colaboración entre enfermeras, comadronas, ginecólogos”.

One interviewee considers that it is a boss (´la jefa´) who acts as a factor of integration in the department. In his case, the boss is a person with a positive and proactive attitude, who takes care of her employees. That, in the interviewee’s opinion, creates an atmosphere in which the employees are more prone to help each other and collaborate:

> **(Hb7):** “Si, al menos en mi departamento somos un equipo bastante integrado, diría yo. Podría esto tener relación con la jefa que nos pusieron hace tres años, es una persona muy proactiva y tiene una actitud bastante positiva hacia su gente, nos cuida, y eso quieras o no se refleja en el equipo”.

The same interviewee from above considers furthermore, that good interpersonal relationships between employees and the collaboration between them are the main key for good work results. He overall sees it as an intelligent work strategy, as it helps in doing the work in a more efficient and productive way:

> **(Hb7):** “Las buenas relaciones siempre ayudan a mejorar el trabajo, por lo mismo que hablábamos antes, somos un equipo y necesitamos los unos de los otros, yo no podría hacer mi trabajo de manera independiente, las buenas relaciones nos ayudan a aprovechar las capacidades de los demás en nuestro trabajo, obviamente si no tengo una buena relación con un compañero será más difícil que me ayude si no se lo pide el jefe, y no puede siempre depender del jefe. Es una mejor estrategia el buen rollo”.

It is observed that there is a strong presence of collaboration between employees in the majority of the cases. As expected, there is more collaboration between employees of the same category that between the employees of the different categories. Nevertheless, in some cases, a member of the different category (e.g. a superior) can be seen as a key of integration of the rest of the employees, and therefore contributes to closer collaboration of his/her subordinates. That kind of boss is often described by others as a leader of the group who has a kind character, acts fair, and respects them. In other

situations, belonging to different clusters may cause problems in teamwork, although it could see that there is evident interdependence and that results of everyone depend on collaboration. It seems that problems in teamwork happen when there is no leader who acts as a key for integration between opposed clusters.

Social Capital – Frienship

Another facet of social capital is camaraderie. The concept of camaraderie is similar and complementary with the concept of good personal relationship between co-workers and the concept of team work. However, the concept of camaraderie, to which we refer to here, is different. It implies closer relationship between co-workers that might be compared to the concept of friendship at work. Actually, it is a friendship that goes from the private to professional sphere and back. From this type of relationship surges certain obligation to help and collaborate with the friend - fellow employee.

It is interesting a statement of the next employee who insists that she never mix private and professional relations. She says that it is bad to mix those two spheres because it brings trouble at work. She furthermore affirms that is counterproductive, and that is why she insists in its separation. However, at the end, she contradict herself, as she admits that she has two or three close friends, who are at the same time her co-workers:

> **(Ha4):** “No, no mezclo trabajo y amistad. Para mí la amistad es una cosa y el trabajo otra. Yo si tengo que pedirle algo a alguien se lo pido al que le toque”. … “porque mucha gente no sabe distinguir y mezcla. He visto muchos follones y peleas. Me parece que es al contrario, que no facilita la amistad las cosas en el trabajo”. … “No tengo amistades en el trabajo con las que me relacione fuera, más que dos o tres”.

The next interviewee describes his relationship with his colleagues as friendly. There is a sentiment of camaraderie which includes private domain, such as

family reunions, football matches, etc., and professional, that generate good working environment:

> **(Hb7):** “Hay algunos colegas a los que considero mis amigos y solemos reunirnos fuera del trabajo, en reuniones familiares, salimos de copas, futbol, etc. Aparte de ellos, mi relación con el resto de colegas es solo profesional. Solemos hacer alguna salida de vez en cuando en grupo, sobre todo en navidades y verano, en general hay buen ambiente, no me quejo”.

Some persons think it is not good idea to have relationship with co-workers out of work place and work hour. That is the case with the interviewee who says that her professional experience taught her that it is better to separate the work from her private life. But, she admits that she has a special group of her closest co-workers to which she gathers couple of times a year outside of work. Nevertheless, she says that she does not consider them friends per se, and she continues insisting in a clear separation of private/professional sphere:

> **(Ha3):** “Yo no soy una persona que tenga muchas amistades en el trabajo. En realidad solo tengo una amiga dentro de la empresa, el resto son colegas y nuestra relación es más bien de trabajo. A través de los años he aprendido que en el trabajo es mejor tener relaciones solo laborales y no entrar en más detalle con las compañeras y compañeros. Hemos visto muchos casos complicados cuando la relación de trabajo es demasiado personal. Mi relación es correcta, más bien seria pero sin problemas con los colegas”.... “Tenemos un pequeño grupo de enfermeras a las que nos agrada cenar juntas algunas veces al año, no las considero mis amigas, pero si colegas cercanas”.

The same interviewee mentions rivalry between co-workers that she perceives at the work place. In that environment, she says, there is a minimum of collaboration and team work, and points out that too much of rivalry between team members ends by affecting a whole group, and consequently a work as well:

> **(Ha3):** “No siento que estemos unidos como equipo, también hay muchas diferencias entre nosotros, pero de momento salvables. Nos vamos ayudando en la medida de lo posible y hacemos lo que podemos para que todo salga bien, pero no se puede negar que hay también mucha competencia entre varias personas del

> equipo. La competencia algunas veces es buena, pero si hay demasiada termina afectando al equipo".

The survey shows that mainly there are good interpersonal relationships between the employees. Some of the employees say it is even more that camaraderie. They claim that they consider some of their co-workers as friends which they see out of working hours. But, there are those who think that private and professional life should be completely separated, as they tend to create problem at work. There is evidence that there is more collaboration between those employees who have closer interpersonal relationships because they feel some sort of friendships obligation to `help out` to fellow colleagues. And even those who deny having any friends at work, at the end contradict themselves, admitting that they have at least one person who they see out of work. It seems that good interpersonal relationships at work tend to covert to friendship out of work. Whether good interpersonal relationships reinforce team and contribute to closer collaboration, however, depends on many other factors related not only on the human nature, but on the functioning of the organisation as well.

Social Capital – Trust

In organizations trust between colleagues at work is important; also, trust between an employee and his/her superior. In some companies complicity between co-workers is palpable, in others it is not.

The example of complete trust, not only in her fellow-colleagues, but in her superior, is reflected in the next testimony:

> **(Hb6):** "Tengo la confianza en mis colegas. Y con mi jefa, que es en realidad la coordinadora, si es la que te marca pero al final de cuenta, es una compañera de más".

Abuse of trust is not uncommon, and in the following case, it refers of abuse of trust of the boss towards her subordinate. The interviewed employee explains that she ends doing the work that it does not corresponds to her, and she

perceived it as unfairness. She feels bad about it, and accuses lack of leadership that would justly organise work tasks:

> **(Hb5):** “Lo que a veces pasa, No sé si es porque los jefes no tienen poder de decir, es que, aunque todo el mundo sabemos cuál es nuestro trabajo, muchas veces sientes que hay un trabajo que no es solo mío sino del conjunto, a veces tu puedes pensar, lo hago siempre yo. Ahí, a lo mejor te vas a tu superiora y le dices, oye esto lo estoy haciendo... entonces, muchas veces esperas que se use el sentido común que ahí no responde porque ella va un poco por el agua y mientras salga, bueno siempre te dice, no te enfades,.. Pero en final de cuentas, te sientes mal, y no es que lo siento solo yo, en general veo que todo el mundo lo pensamos... lo que la coordinadora o la supervisora debe decir es, bueno pues voy a arreglaros, voy a hacerlo realmente y aunque sea antipática, vamos a dividir tareas o vamos a reunirnos y vamos a hacer tal o cual.... - no. a veces eso es que falta en los superiores”.

The next interviewee describes with details how the change of administration and superiors influence employees and their work. She started with the ancient administration and the former director of the centre, who she labelled as a dictator. That director, evidently, did not enjoy the trust of his employees, and he, himself, did not trust them. His solution to the problems and suggestions ended frequently by menacing of firing of those who were disaccord with him. The next director (for one year) was a woman, who being new in the centre, decided to trust to wrong employees, and using literally the words of the interviewee, her management was complete chaos; after one year, that director was soon replaced with the actual director, who seems found the common ground with the employees and right way to manage the center. It means, the latest director was able to correspond to trust demanded by the employees, which resolved many issues that were impeding good functioning of the center:

> **(Ha2):** “Al comienzo cuando llegó este cambio de directora, vino la nueva administración y se fue un director que era súper dictador, que no nos dejaba. El nos decía: si no estás de acuerdo con lo que yo digo tienes la puerta abierta, o sea, que te echaba a la calle y ya está. Cuando se marchó esa empresa y el nuevo director entro, porque la gestión de la residencia la van cambiando cada cuatro años si no me equivoco, van a empresas y al mejor postor le conceden la gestión. Con la nueva empresa dijimos, que bien; pero a la directora que pusieron el primer año

> fue un poco caos porque era nueva, no conocía a todos y se dejó llevar por una trabajadora que tampoco era muy buena. Entonces, claro fue un caos ese año. Cuando ya cambiaron a esa directora, porque teníamos denuncias, muchas graves, en periódicos salía que maltratábamos a los ancianos, que se morían ahí. A ver, podemos tener errores pero maltratar a los ancianos ninguno y entonces quitaron a esta directora y pusieron a esta nueva con la que estamos actualmente, y entonces con esta directora vi la luz, fui y me senté a hablar con ella".

In the next two testimonies, there is a very similar perception of trust at work. In the first one, the interviewee says there a limited level of mutual trust that permits work to be done. It is not especially enthusiastic talking about the trust, meaning that it is not the best feature of his organisation, and its employees:

> **(Hb8):** "Hay cierto grado de confianza, yo no diría que total, pero en general podemos hablar de un nivel regular de confianza mutua".

And the other testimony provided by the following interviewee, implies that there is a certain level of trust in his company. Nevertheless, he admits he does not trust to the company, as it is proven in the past that it is not worth of trust. He says that the administration of the company affirms trust in its employees, but the interviewee insists that is not true. As a proof, he mentions some propositions and suggestions offered by employees that were completely ignored by the administration:

> **(Ha3):** "Yo diría que hay cierto grado de confianza, pero no es un nivel alto. Quiero decir que yo no confío demasiado en la empresa porque de momento no se ha ganado un nivel alto de confianza. Definitivamente confío más en esta dirección que en la anterior, depende de lo que pase en el futuro la confianza mejorará o no. La empresa dice que confía totalmente en su equipo, pero tampoco es verdad, porque en muchas ocasiones han ignorado nuestras sugerencias y recomendaciones".

To resume, there is noticed not very high level of trust in the observed organisations. The employees mentioned the main reasons of that mistrust are suspicious administrations, and superiors who take advantages in their behalf. The chain of trust between employees and the administration was broken because the administration defrauded them in the past. It did not delivered what

promised them. Besides, it does not create a climate that nourishes fair exchange of information. It is observed, in one of the organisation, a general dissatisfaction and disillusionment of the employees; not only salaries and unstable work contracts are precarious in the sector of health, but work conditions (trust included here as well).

Social capital / communication / knowledge sharing

Business or work meetings are a method that serves, among many other issues, as a point for exchanging or gathering information, making proposals or suggestions, discussion of different topics related to work, discuss different issues at work place, as well for daily organisation of work tasks. Work meetings are present practically at all levels, from administrative board, trough mid-level positioned employees, to those who occupy the lowest position in one organization. The personal contact with other employees creates interaction between them and influences a work dynamics. Although meetings are taught to be pragmatic and useful for work, they frequently result to be quit the contrary, lost of time and without any positive outcome.

In reference to useless meetings the next interviewed employee criticizes the abuse of weekly reunions by certain employees. The interviewee thinks that they talk too much about their daily issues without concentrating their efforts in finding solutions. She points out, that the main purpose of the meetings is to be properly registered in written form in official documents. In brief, the interviewee considers it waste of time and energy:

> **(Ha2):** “En la reunión cada semana, se analiza lo que pasa en el día, por ejemplo, que problema tiene pepito. Pero se habla, habla, habla, pero no se concreta una solución. Yo para hablar de mi trabajo del día a día, no hace falta explicarlo otra vez en la reunión, porque entonces no somos eficaces, escuchamos mucha palabra y no somos eficaces, veo que eso aún no se reconduce, es como que los técnicos lo saben todo, se pueden tirar una hora dos horas reunidos, no resuelven nada pero en el acta consta que han estado todos, resuelvan o no pero han estado todos. … Muchas veces, la mayoría, el 80% de las cosas no se resuelven solo se habla, se habla, se habla y ya está”.

In a contrast to the previous testimony, the next two show that a brief daily meeting can be very productive and constructive:

> **(Hb7):** “Reuniones tenemos cada día con la jefa por la mañana. Analizamos los temas importantes del día anterior y planificamos el día. Con esta jefa suelen ser reuniones más o menos cortas y bastante concretas...”.

The next interviewee explains that daily meeting serve for organising work, to evaluate the work done the day before and discuss the plan for the current work day. The interviewee says they do not dedicate time to discuss problems, they try to solve them in situ, when possible, and if not, they let superiors to take care of that:

> **(Hb8):** “Tenemos reuniones diarias, teóricamente para organizarnos. A veces se comparte información, pero regularmente solo hablamos de lo que pasó el día anterior y lo que haremos el mismo día. De resolver problemas, más bien eso lo hacen los jefes, yo no veo que nos involucren demasiado en eso, más bien nos organizan y dan órdenes. De hecho, algunas veces resolvemos nosotros mismos los problemas al momento, muchas veces los jefes se enteran en la reunión del siguiente día”.

(**Social capital / communication / knowledge sharing)**

It has been observed two types of meetings. First, which is characterized by it length, usually qualified as completely useless, and second, daily briefings, as the very word describes it, brief and very useful for everyday work. In companies who are organised in bureaucratic form, reunions tend to be more extensive; everyone can offer their opinion, suggestions, criticises, etc. in respect to any subject. All discusses in that reunions is concisely documented in official, written form, and registered. The companies in which is practiced daily, usually morning, briefings, are focused on more concrete issues, such as daily distribution of work tasks. There is not written documents or similar forms that register that type of meeting, like it is case in the first one. It seems that the better results come from the second type of the reunion. They show to be more

efficient, as well as better evaluated by the employees. It would be interesting to investigate what are the profile, as well as the optimal number of persons that allow this second type of reunion for specific organisation. It might allow saving considerable time, and money in many companies.

Knowledge - Innovation

Today, many companies, in order to compete successfully, search optimization and try to innovate. In that climate, one could suppose that proposals for work improvement and constructive suggestions from the employees should be more than welcome. Sadly, the proofs testify contrary.

The example of the interviewed employee shows that there is little or no consideration to ideas for improvement, coming from the front-line employees who occupy the lower position in the organisation. The interviewee claims that there is no one actually interested in her opinion, and that she finally accepted it, at least, in theory. She admits she adapted to existing working culture, meaning she does not try to convince nobody about how improve the processes related to her daily work in order to make it more efficient; she simple does it in her way. She applies the formula created by her, which gives good results, avoiding inefficient standard procedure imposed by the company:

> **(Hb5):** "Yo estoy en lo más bajo. ... nadie me pregunta y yo tampoco... entiendes. ... al nivel interno, yo hago mi trabajo en mi manera. Me dijeron de alguna manera, pero yo lo hago de otra, pero los resultados tienen que ser los mismos".

The next interviewee, same as the previous, belongs to lower level employees in her company. For the same reason, she believes that it is not up to her to propose improvements or to innovate. She implies that bosses/superiors are prone to appropriate someone else's ideas and present them as theirs. Thus, she prefers to stay in a shadow, unless it jeopardizes a lot her own work:

> **(Hb6):** "Las ideas no pueden surgir de la gente de así, de abajo deben salir de los coordinadores estas cosas. ... yo lo único, a lo largo de estos años, si alguna idea que ... Eso es por, pero no

> por escuchar mi idea, sino porque me callara. (risa). ... por pesada, y no porque hayan valorado el que mi idea. Si tengo una buena idea y que lo voy a presentar - no. porque eso no soy yo que... pero sé si es algo que me perjudica en mi trabajo mucho, entonces sí que me hago persistente. Así que le logrado alguna cosa. (ríe)"..

There are companies that are more open to their employees' proposals, when it comes to improvements. That is the case with the following interviewee says that in her company there is an excellent director who listen to its employees, and support them. However, that support is merely moral, as there is lack of resources necessary for the realisation of the proposals. Finally, it's up to one to find a way how to carry out and implement his or her idea, or if not, to abandon it:

> **(Hb5):** "Aquí tenemos una muy buena directora. Aquí te escuchan…. te dirán que lo hagas, eso es seguro. Pero creo que no te dicen que no hay realmente recursos para hacer esto. Si quieres, lo haces. Pero tú solo te apañas. Eso es bueno, que te apoyan".

The next testimony explains how her superiors value her and her colleagues. She says they are only interested in numbers. If numbers are positive, everything is all right. And if there are no complaints from outside of the department, it is also excellent. But, if some employee takes an initiative and presents an interesting idea that could improve work, the superiors won't hesitate to take advantage of it. She suggests same as the previous interviewee that the superiors will likely present them as authors of the proposal.

> **(Hb8):** " … me da la impresión de que los jefes solo ven los números, y si los numero salen, el resto no importa mucho. Para la jefa, si el resto de departamentos no se quejan del día anterior, todo está bien. Si tú lograste mejorar algo, no es interesante para ella, a no ser que pueda sacar partido de cara a su jefe o a otros departamentos. Eso no me agrada, porque se pierden muchas buenas ideas".

By the testimony of the same interviewee, it seems that there is not lot of interaction between superiors and their subordinates. She says that superiors or bosses do no acknowledge individual achievements. Curiously, they do

acknowledge verbally, at work meetings, team achievements. It generally applies to those days, during which they manage not to have/avoid major problems or crisis:

> **(Hb8):** “Uno va sacando el trabajo y ellos no se meten mucho. Yo personalmente no he visto que reconozcan especialmente el trabajo de alguien. También es verdad que suelen reconocer el trabajo en equipo en las reuniones, es decir, los días que se trabaja mejor y no hay incidencias, suelen comentarlo. ...pero no es que valoren especialmente las propuestas y las premien”.

Analysing the data in the sample of the two companies there was not found any evidence that testify of rewarding the individual effort of the employees who tried to improve or innovate the existing procedures or processes. Furthermore, they were discouraged to even propose their suggestions, alluding to their low rank in the company. But, when employees dared to expose their ideas, they were completely in the hands of their superiors, which by their testimonies tended to abuse the trust, and appropriate those ideas. Somewhat better situation is in one of the companies; in which administration tend to be open to suggestions of their employees, but not sufficient to back up their realisation. In both cases, the absence of acknowledgement of the employees who seek better solution in functioning of the organisation is present. It is not clear what the reason for such company’s politics is.

It has been found that there is a lack of good organisation and planning which may be attributed to many reasons, between them mediocrity or incompetence of management. For that reasons, there is a continuous accumulation of work, which ends in overwork, working out of work hours which is not paid, and general dissatisfaction. Additionally, with the existing precarious work contracts and confronted clusters that impede quality teamwork, the management do not appear as a factor that creates good working climate. Due to this climate, it is not surprising the low level of trust in the leading structures of the companies. The positive point surge in interpersonal relationship between employees which due to their close personal tights manage to create more productive collaboration that can be appreciated in the final result of their work. The

employee's enthusiasm to innovate and improve their company's functioning, not only is discouraged and not acknowledged, but in occasion despised as well. It has been detected that daily briefings are far more efficient that endless reunions that are thorough documented.

Knowledge

In this part the most relevant topics of Knowledge are analyzed, including: trainning, induction training, knowledge transfer, learning, knowledge storage, learning storage

Trainning

Initial learning procedure, continuing learning and trainings, courses, and storage of information, are variables that are analyzed in the part referred to knowledge. It is common that every new employee passes trough some sort of training before he/she actually starts working. Many of them will continue learning during all their carriers because the nature of their work. Some of them will occasionally attend specific courses, which will be mandatory or not, some will be offered complementary courses which are not directly connected to their work. The objective is to obtain new information or to master certain skills. The companies, on their side, try to capture and save that information and accumulated knowledge transforming it into internal capital.

Induction training

The interviewed employee remembers that when she started to work, she first assisted to an initial coaching seminar. She describes it as poor and insufficient first coaching program that did not provided her necessary information so that she could do her job. The interviewee explains how she learnt to use the company's computer programs, essential for her daily work. She indirectly laughs at some type courses implemented by the management, saying that they are inadequate for her and her co-workers, and that they are waste of time. The interviewee feels pressured to attend them:

(Hb5): " … casi te obligan un poco a hacerlo".

In addition, she says those courses are not serious, and sees them as a sort of games:

(Hb5): " … son cursos raros. Yo no lo veo muy … que no sirven … no se … a mi no me …".

Other interviewee offers even sadder story. The initial course in her company, she says, consists in handing over a company's official "manual of instructions" to new employees, and from that point, it's up to him/her to find out how the "things are done". But then, in the words of the interviewee, surge another problem. As the new employee does not what his/ her work is, and how he/she should do it, that it is up to senior employees to teach them. But, senior employees have their own work to do, which does not include teaching, and they simply do not have time for it. She and her co-workers have complained to their superiors, but the things remained the same. The interviewee strongly criticizes the management which continues to ignore this situation:

(Ha4): "Si, así aprendemos, nosotros mismos nos enseñamos, porque al personal nuevo le dan un manual y se tiene que espabilar. No hay un plan de formación, te sueltan ahí y o te espabilas o no te enseñan, y quienes sufrimos somos los trabajadores, porque a mí no me pagan por formar a mis compañeros y muchas veces nos hemos quejado. Muchas veces ya te quemas, porque viene uno a preguntarte y le digo pilla lo que veas o lo que sepas, o me preguntas, pero yo no estoy ahora para enseñarte y es así, porque es uno y otro y otro. Y también nos hemos quejado, pero chica. Te dicen que sí, pero no hacen nada. Le digo a la supervisora, tu cobras por hacer tu trabajo. Ellos asumen que nosotros tenemos esa responsabilidad y nos lo dejan a nosotros. Nos lo dejan, supongo que lo deben asumir en el papel. Y esa parte es de organización".

The same "initial training" had the next interviewee. She says that someone showed her the company (gave her a guide a tour), presented her to the bosses and other employees, and handed a manual which she studied for a week. Then, the following week, she was delegated to a senior colleague who guided her trough some specific procedures, which gave her necessary

tools/information to keep learning on her own, but with support of her colleagues:

> **(Hb8):** "Recibí un curso digamos informal, me mostraron la empresa, me presentaron a los compañeros y jefes. Estuve unos días leyendo algunos manuales y procedimientos que me dieron. Eso fue durante la primera semana. La segunda semana una colega del departamento que hace el mismo trabajo que yo, me capacitó en el uso de todos los sistemas y procedimientos a seguir, a partir de ahí, yo fui aprendiendo con mis compañeros".

And adds that it was difficult at the beginning, because everything was new and she had to learn fast so many things:

> **(Hb8):** " … sinceramente las primeras semanas fueron muy difíciles porque había muchas cosas que no dominaba y tuve que aprender en la marcha. Quizá más capacitación al inicio no estaría mal".

The following testimony repeats similar store as the prior, with the one big difference: this employee, at the beginning accompanied by the senior co-worker who was explaining her work procedure. This initiation lasted couple of weeks, and the third week, although not quite prepared; the interviewee was left alone to work. She was much stressed, and confesses she was very dependent on help provided by her colleagues:

> **(Ha3):** "Yo comencé a trabajar en esta empresa hace 10 años y recuerdo que mis primeros días me pidieron que trabajara ayudando a una compañera que me iba explicando el trabajo, realmente el curso por así decirlo me lo dio ella, estuve un par de semanas ayudándole y a la tercera semana me dejaron sola, entonces tuve que espabilarme porque había muchas cosas que aún no dominaba, por ejemplo todo lo relacionado con partes del día, reportes, etc. En ese momento tuve que pedir ayuda a mis compañeras para ir aprendiendo poco a poco, fue un proceso un poco estresante".

The following interviewee explains that her initial training was practically informal. First human resources department showed her the working place and explained the main policies and rules of work; after that her boss introduced her to the new colleagues of the department and explained in a general form what her work was about. From that point their colleagues were in charge to explain

her how to use information systems (2 hours), and then she was learning by asking her colleagues.

> **(Hb7):** “Fue hace ya varios años, pero recuerdo que si me capacitaron pero no de manera formal (es decir, no tuve un curso como tal). Inicialmente una chica de Recursos Humanos me mostró la residencia y me explico a nivel general como se trabaja, las principales políticas y reglamentos. Después mi jefa me presentó en el departamento y me explicó a nivel general lo que debía hacer. Los temas específicos correspondientes a los sistemas que usamos me los explicó una compañera, me dedicó un par de horas y después yo iba preguntando a los compañeros. Poco a poco fui aprendiendo”.

First steps of a new employee in one organisation usually include certain rituals, such as presentations of the organisation’s facilities, and personnel. Following step is getting to know the equipment (machines, computers, software, etc.) and certain procedures. The newcomer gets an organisation’s manual, in which main features and guidelines for the work are presented. In some cases, initial courses or coaching are provided. Analysis of the quality of the mentioned courses shows that they are insufficient in content, as well as in form. The insufficiency in content refers, for example, to poor explanations of use of specific equipment. While the insufficiency in form, refers to duration of courses which do not allow enough time to assimilate all new and necessary information. The most popular method of initial learning procedures and processes passes from self-instruction based on organisation’s manuals, to senior’s employee tutoring. The last seems reasonable in theory, but the problems is that the process of tutoring per se, is not recognized by the organisation as part of the job description of senior employees, meaning that they are forced to teach to new employees, regardless their job description. Furthermore, the tutoring, not being recognized, does not enter in scheduled work tasks, so that senior employees have to do their daily tasks plus instructing the new employees using the same hours they used without instructing. Besides that, this method of teaching not only is not seen as an efficient one, but creates stress for both, the mentor and the apprentice.

Trainning – Knowledge Transfer

Several interviewees pointed out that their companies were implementing electronic management of patient´s files for last couple of years. That meant that companies initially had to train employees on how to use the computer and the specific designed software. Thus, the next two interviewed employees describe their first contact with computers and software at their work. One interviewee said that the coaching at the beginning consisted of basic things, such as the procedure how to log in to the system, and manage a personal account. Then, she says that she started clicking on different options presented on the software, called Reciplus, finding out again new options, and so on:

> **(Ha2):** "Nos daban pequeñas cápsulas también, mediante el ordenador o alguna otra persona que te explica lo básico que te dice mira le das aquí tu contraseña y esta es tu área, y luego tú también por curiosidad vas entrando, vas mirando, y luego Reciplus te va mandando cápsulas donde te dicen hoy vamos a crear la lista de actividades o el programa de actividades y pues entonces escuchas un poquito la clase y ya lo aplicas, si lo que pasa es que uno lo explicaron y fue efectivo porque se dejó de utilizar esta".

The second interviewee passed trough the initial course, which included the use of computer and the software used in the company. She thinks that it is very important to save everything in electronic form, because they use to have audits periodically. The interviewee adds that she attended a safety training as well, but many years after start working at the company:

> **(Ha3):** "Un par de meses después de haber empezado en esta residencia, recibí junto con otras chicas un curso relacionado con procedimientos administrativos, porque en estas residencias los temas administrativos son muy importantes debido a las auditorias. Después recuerdo que asistí a un curso de seguridad, pero eso fue varios años después de haber ingresado a la empresa".

One interviewee describes it as a traumatic experience, passing from the paper to electronic files. In her opinion, a course of one or two hours is not enough to learn how to manage a computer program, at least in her case:

> **(Ha4):** "… ir aprendiendo a salto de mata. Para mí fue caótico. … Nos capacitaron una hora o dos y luego tu misma te tenías que espabilar. … entonces para mí el cambio fue difícil, pasar del papel al sistema (que a veces se cuelga) es un poco traumático".

Continuous updating knowledge in the area of work is a must; at least, that is what the next interviewee is claiming. She considers that her company is not especially keen to dedicate resources on courses for update knowledge of lower rank employees. She thoroughly illustrates how she defends what she considers the best for her daily work, and how she insists in to adopt the activities that suits the best for her residents (patients), that includes course to form the staff for those programs:

> **(Ha2):** "Yo, con lo que me han formado en el 2006, yo no estaría trabajando, tienes que estar reciclándote lo que se dice. Hay algún curso que sí que te lo han hecho ellos, que lo han pagado ellos pero pinceladas, pero cursos así consistentes ninguno, eso es lo que yo veo; incluso fui a una reunión donde fue un alto ejecutivo de la fundación y justo la reunión era de que vamos a hacer este año de formaciones y nos pedían que cada residencia trajera las propuestas de que querían los trabajadores que les formemos, eso los primeros años que entre en la fundación, y bueno yo lleve propuestas, y recogí propuestas de mis demás compañeros y de esas propuestas es más para los coordinadores y menos para la gente que está al lado del paciente. Si ahora lo que quieren es todo protocolo, le tenemos que poner cualquier cosa a una persona, protocolo, y quieren que todas las residencias de fundación hagan los mismos programas; no, cada residencia tiene su forma de trabajar y sus residentes, yo no puedo hacer un programa de yoga, porque yo no tengo personas que puedan hacer yoga, pero ellos quieren que tenga un programa de yoga, entonces ahí es donde tengo un roce con los que implantan eso y les digo que no, que yo no voy a hacer eso, yo voy a hacer lo que yo crea y lo que sea mejor para mis residentes y ya está; pero lo que si hacemos por ejemplo el programa de mantenimiento en el gimnasio que los bajamos tres veces por semana y luego todo el movimiento más pasivas, los más dependientes, y yo ya sé que eso les va a funcionar y yo al final me enfoco más en lo que yo tengo, somos dos fisio-terapeutas por eso".

The same interviewee is perceived as a persistent person with the strong character, who arrives to achieve her goals. She is permanently searching courses which keep her updated, and are useful for her job/career. What she says next, is very interesting. She claims that, as the company is not backing

her up in that mission, she does attend to courses in her free time, without any economical compensation:

> **(Ha2):** “Entonces cuando hay cursos, pues me apunto y si son fines de semana me voy fines de semana y si son entre semana pues pido permiso en el trabajo y luego devuelvo esas horas de trabajo, porque si tengo que esperar a que la empresa me forme, nunca llegara nunca”.

The interviewed employee of the other company claims that her company covers the fee of some courses, but those courses tend to be out her working hours, so in her case, she says she is not especially interested in attending them. She considers that only employees who are interested to achieve certain, upper-level positions in the company, are willing to sacrifice their free time and not compensated hours, to assist to the mentioned courses:

> **(Ha3):** “Algunas veces envían información respecto a cursos, pero no es muy común, me parece que la empresa los paga pero regularmente son fuera de horario laboral y no se consideran como horas extras. Yo no he asistido a ningún curso. Si, alguna compañera estudia en su tiempo libre, pero que yo sepa la empresa no le paga el curso. Imagino que mi compañera lo hace para buscar una promoción y de momento no le importa que la empresa no le pague el curso”.

The next interviewee thinks that the company actually prefer to invest resources in mid and high rank employees, instead of in her and her co-workers who are lower rank employees. She claims that the first group of employees (mid and high rank) have higher quality courses that last more than the courses offered to the second group, which are insufficient and lower quality:

> **(Ha4):** “El presupuesto creo yo que siempre es para los más altos, no llega para todos igual. Por ejemplo, sé que los médicos y otras personas de nivel más alto fueron a formarse a un centro. Nosotros no, tuvimos que hacerlo ahí… Como faltan horas, algunos cursos que deben darte en dos días te lo dan en una tarde o en una hora. En esta parte muy mal”.

In addition, the same interviewee discovers a shocking detail related to learning courses. She states that the courses, which are mandatory, are discounted from the salary. That means that the employees are paying the mandatory courses.

She furthermore says that courses are often planned when they have free days (days that they are not working). Supposedly, the hours dedicated to attend courses are compensated in time dedicated to those courses (but they never are). The interviewee criticizes also the calculation of hours dedicated to courses. She claims that there are discrepancy between the actual/real duration of courses, and the time of courses presented in documents:

> **(Ha4):** "Son obligatorios porque te descuentan en la nomina por capacitación. Ellos están obligados a dar cursos a los trabajadores, sino no te darían ninguno. En las nominas cuando te pagan hay un apartado que indica formación, así como se descuenta el desempleo, también se descuenta formación. … Puedes decir que no, claro que si, porque a veces la empresa te obliga a hacer los cursos en tus días festivos, lo hace mucho. Te dicen, mañana tienes un curso, pero no te vamos a devolver horas, cuando están obligados a devolverte horas, entonces la gente dice que no quiere venir. Ahora la empresa hace eso, nosotros luchamos para que la empresa haga los cursos en jornada laboral. Muchas veces la empresa te quiere formar en dos horas cuando el curso es de dos días, tú estás trabajando y solo has perdido dos horas, para ellos son beneficios. Y luego computan, a mí la última vez que me dieron un certificado el curso fue hecho en una hora o media hora y cuando veo las horas en el diploma eran dos días y cuando lo comenté con la empresa ellos me contestaron que me dieron el diploma y ahí se indican las horas, pero era mentira".

Similar to the previous interviewee, this one also claims that if the courses are not mandatory, they are not covered by the company, meaning that if an employee wants to attend a course or training, he/she ought to pay it from his/her pocket, even if the course is related to his/her work:

> **(Hb6):** "Formación, cursos, pero muchas veces esta a tu cargo económico, los que no son obligatorios".

The next interviewee describes trainings and courses as a personal sacrifice, as there is so little interest by her company for that aspect:

> **(51):** "El hospital no ofrece ningún curso, formación. Y el centro alguna sesión y te dan el día para hacerlo, pero lo buscas tu los cursos; en hospital ni eso, hay que coger día de las vacaciones. Formación es porque tú lo buscas y te sacrificas".

A bit better situation describes the next interviewee. He says that, even though his company does not cover fees for courses, nor imparts them, it supports workers in a way that it permits more flexible working hours, and allows change work shifts:

> **(Hb7):** “La empresa no suele ofrecer muchos cursos de capacitación, sin embargo si apoya a la gente que quiere hacer cursos por su cuenta, por ejemplo con horarios más flexibles, cambios de turno, etc. No he escuchado que paguen a alguien las matriculas o que los compañeros estudien en horas de trabajo”.

In the opinion of the next interviewee, in the past, there were more courses and conferences in the company. They were sponsored by different organisations and companies. She sees the positive side co courses, saying that they serve as well for to changing everyday routine. Also, one enters in the dynamic in which he or she search more information, exchange them with the colleagues; and overall this serves to motivate:

> **(Hb5):** “Antes había más cursos, congresos. Los organizaban, no les pagábamos de nuestros bolsillos porque son caros. O los pagaban empresas. Eso te cambia un poco la rutina. Después buscas más informaciones, intercambio con los compañeros, eso motiva mucho, se a profundiza más”.

Courses of updating, conferences, seminars, they all represent different methods of learning and continuing learning process. In theory, well instructed employees represent an important asset of every organisation. That means that organisations should invest resources in that aspect. However, in the case of the companies analyzed, there is little evidence to support this. Some employees say that they attend courses related to their work in their spare time, and even if there is an agreement which affirm that the hours dedicated to the courses and seminars will be compensated, they never are. Moreover, some interviewees certify that the mandatory courses are discounted from their salaries (which mean that employees are obliged to pay for those courses). The quality and duration of courses is also questioned. Apparently, there are differences of the same courses dedicated to lower level employees, and those dedicated to mid and high level employees; so that the first group ends

frustrated, stressed, and not quit well instructed. It seems that the situation was different in the past; there were significantly more courses and conferences paid by companies, foundations, etc., which were promoting their products and services; trough these events companies and foundations were benefited too. The interesting question is; why that stopped? Why the organisations are no more interested to invest in their employees?

Knowlwdge – Learning

Nowadays, many companies tend to save all the information inside the company. They invest considerable resources in technology that allow them to keep a great amount of data. But, not only pure data is stored. Sometimes, there is more complex data which is stored. It refers to processed data, which is transformed during the process of analysis; it is commonly named knowledge.

Despite the fact the employees are instructed to storage all the information in the corresponding electronic form and corresponding place (database), one interviewed employee declares the contrary. She furthermore blames to the bad work contracts as the principal cause of this situation. If there are individuals who are hired to work only one, two or three months, then it is more difficult that they they will respect this rule:

> **(Ha4):** "No, no queda todo registrado. Siempre hay cosas que se quedan fuera. Más en gente que entra a trabajar un mes, dos meses, tres meses".

Workers, who have stable work contract, generally tend to register all information about every patient, and every situation. For that purpose, they use one computer program:

> **(Ha4):** "Tenemos solo un programa, pero rellenamos varios apartados, de cada persona. También cada seis meses rellenamos un informe de la evolución de cada paciente, con diferentes apartados y hay que reflejar todo".

The same interviewee explains why it is important to register everything. She says that in the past, before electronic era, in her company, they did not have to reflect in written form the complicated situations occurred during the day; and that might be very important, as they work with patients, and need to have access to information, such as type of medicine, etc. Also, there is written evidence in case family of patients ask for it:

> **(Ha4):** “Porque claro, por ejemplo antes todas las incidencias que tenías con los pacientes o con la familia quedaban en el aire, ahora ya hay un escrito de lo que ha pasado ese día. Para mí es muy importante y reflejo todo, lo que se le hace al usuario, medicamentos, duchas, etc. Si la familia dice que no se ha hecho, pues ya está reflejado de manera escrita”.

The other interviewees repeat the same story. They also affirm that the company insists in registering every single detail related to events occurring during working hours, in the corresponding database. The information is used for inspection purposes, as well for the internal consultation by employees.

> **(Ha3):** “La empresa nos insiste en la necesidad de reflejar toda la información posible, ya que es muy común que tengamos auditorias...Yo creo que se documenta mucho”.

> **(Hb7):** “ … nosotros a nuestro nivel documentamos muchas cosas, casi todo diría yo, porque la empresa nos exige que documentemos en el sistema”.

> **(Hb8):** “Toda la información se registra cada día en el sistema, en las minutas de reunión o en correo electrónico. En ese sentido la empresa insiste mucho en que registremos lo más posible. En el pasado ya hemos tenido alguna situación en la cual se requiere revisar la información para aclarar temas”.

All employees have access to databases: managers, physicians, doctors, etc., they can see the information and also see who registered that information in the database, when, and where:

> **(Hb8):** “Toda la información que reflejamos en el sistema la pueden ver los colegas, jefes, médicos, etc. y saber quién la puso, a que hora y desde donde”.

Knowledge storage

It is affirmed that the organisations included in our sample, invest considerable more resources in technology that in the human resources. The latest trend in organisational management is to capture/storage all the possible information. Some experts advert that in many cases it is very expensive and sometimes not justified. Nevertheless, a great amount of money is dedicated for acquiring computers and the most sophisticated software. Those complex computers and software, although useful for work, require adequate knowledge to be used correctly. Many employees recognize their limitation, when speaking about computers. They see computers as potentially great help in their everyday work, when properly used. Supposedly, all the information is just on a one click away and all employees have access to it. Is it the real situation? What about those who have short-term contracts and who usually are forgotten? Their work and information many times do not get recorded, at least not by their user ID (there is evidence that many times they are not given a user ID to use internal systems), because they usually do not have them. That leaves a doubt whether all saved information is actually correct, and reliable, on one side; and on the other side, whether this trend /obsession to storage everything leads to saturation of information finally.

Knowlwdge – Learning/Storage

Knowledge is alpha and omega of every activity. In the area of health, its role is particularly important. Treating persons with specific medical conditions require a permanent updating of knowledge. We are living in the era of explosion of discovers in many scientific fields, here understood in medicine as well. There are fusions of the scientific disciplines that in the past were unimaginable, like medicine and engineering, or biology and engendering, today better known by the name of bioengineering. We, as a civilization arrived here by investing in education, acknowledging and rewarding the best pupils, students, researchers and workers. The personal effort of those paid out. But, something happened. It

seems that information gained terrain of knowledge. Organizations and companies stared to compete which one will capture more information. For that reason, they stared to invest more in technology, see computers and computer programs. Computers fed constantly with new information, and equipped with powerful algorithms which permit them to act more accurate and faster than persons. Maybe in that fact relies a justification of companies to invest more in computers than in employees, although we must ask ourselves whether we would prefer to be attended in a hospital by a nurse or by a robot.

Use of Information and communication technologies

In this part the most relevant topics of ICT use are analyzed, including: Knowledge Transfer/ Learning to use ICT, Comunication, Problems related to use of ICT.

The increasing use of new information and communication technologies in the area of health has been perceived as positive in general. However, for certain number of employees, the change from “traditional way of working” (manual) to “ICT intensive working” was very difficult. For some of them it was their first contact with computers, so they were obliged to learn all from the cero. In the following lines, the analysis of the use of ICT, its advantages and some of its disadvantages, the learning process with its complexities and challenges, and the experiences of people working with the new way of electronic communication(which is gaining terrain to traditional way of communication), are presented.

With the introduction of electronic databases, the part related to administrative tasks changed greatly. As the interviewee points out, before they had to search the “anamnesis of patients” that were saved written on paper, on cabinets. Now, it is far faster to find the information with the help of computers. The interviewee complains about the access to information in databases, for him a more open access is needed, also thinks that certain application to use and manipulate the data included in the database, is needed.

> **(Ha2):** “De no tener nada a esto, es muy útil, claro no hay una comparación. Lo bueno es que con un clic tienes la información al momento. Antes tenías que ir a historias clínicas, rebuscar en papel. Es rápido, es claro, y es muy útil si. No, yo creo que aún deben de dar permiso a los trabajadores para poder acceder, para poder crear alguna tabla adicional”.

Contrary to the above statement in which stand that all employees of the center have access to the database, in the following one there is evidence that is not entirely true. New employees which have a limited (short) work contract do not have authorisation to use the program (databases). It might present an obstacle, as the work and observations of those employees that do not have a user, may not be registered, unless one of their colleagues that have access to the program helps them registering their observations and comments using their own user.

> **(Ha4):** “Somos varias y todas nos preguntamos, nos pasamos información y nos ayudamos. En cada planta hay dos o tres trabajadoras, depende y todas nos vamos pasando información. Es más, hay gente nueva que ingresa ahora a trabajar y no tienen acceso al programa. Porque claro, como son gente que probablemente estará contratada solo por tres meses por ejemplo, no les dan acceso al programa. Tengo una compañera que está contratada por solo un mes y no tiene acceso al programa”.

The following two employees describe a computer program – Reciplus - that they use daily. The mentioned program is an electronic database which allowed them to consult all sort of information related to the medical files of the patients of their center. The first interviewee highlights some benefits of the database for her daily work. She mentions accesses to patients’ medical therapy, the elaboration of the specific medical prescriptions, and dosage for every particular patient. She considers it extremely important.

> **(Ha1):** “El Reciplus, yo lo veo bastante útil, para nosotros sí. Porque bueno, a parte de la información, tenemos el acceso a todo lo que es tema, por ejemplo toda la parte médica. Tenemos todos los diagnósticos incluidos ahí, y todos los tratamientos. Entonces todo lo que necesitamos saber para preparar la medicación, que lo hace el equipo de enfermería, pues nos basamos en el Reciplus. De esto porque esta detallado toda la medicación con las dosis que toma cada

> paciente. Y eso para nosotros es muy importante, porque nos ayuda mucho".

The second interviewee uses the previously mentioned computer program to evaluate a patient's general physical condition, as well as anamnesis, on which she then elaborates a specific physiotherapy. Later, she uses a program to track the evolution of medical treatment, how the patient reacts to the therapy, etc. The interviewee has a positive view on the fact that all staff of the center have access to this program and its database:

> **(Ha2):** "Actualmente tenemos un programa que se llama Reciplus y ahí está toda la información están las patologías, todo, todo, todo. Y en la parte medica están las patologías y todo lo que yo tengo que saber y ese paciente cuando recién ingresa, que tratamiento lleva, y en función de eso yo valoro la parte de físico. Y está mi parte de físico, que cualquiera puede aplicar y ver lo que yo escribo. Por ejemplo, la primera valoración al ingresar, luego un seguimiento que yo le voy haciendo. El Reciplus sí, todos los datos se ponen en el Reciplus y todos tienen acceso, inclusive los técnicos, y gerocultores que antes no tenían".

Another employee of the same medical center, explains other benefits of the program. As they all enter all information related to patients, the management uses that information when they have periodical inspections. Or in the case, when the family of a patient have some doubts in reference to medical or other treatment, the management consult the data from the program.

> **(Ha1):** "… con ese Reciplus, hasta la directora tiene ese acceso, para enterarse de todo. Es un correo abierto que puedes entrar a todas las especialidades de cada residente, en vez de ir a buscar como antes. Pues entras a Reciplus y buscas el área que quieres y te enteras de todo lo que han dicho de esta residente. Entonces la dirección también hace lo mismo, y con esto también demuestran cuando hay inspecciones. Y todas están, que ha habido, por ejemplo de algún caso o quejas. Entonces queda todo reflejado ahí. Porque claro, las quejas de familias de que no se hizo todo esto. Entonces dicen, pues lo vamos a comprobar a través de esto, porque cada profesional pone lo que hizo con cada paciente y lo demuestran a través de Reciplus, y ese formato se le presenta a una inspección que hay".

There are other computer programs, a part of the database. The employee found that some programs of Microsoft Office are useful for daily work. Thus,

they use Word to create, and print a sort of big posters with information relevant for their patients, while Excel is used for accounting of the center´s inventory:

> **(Ha2):** "El Reciplus, el ordenador para introducir todos los datos, no ahora lo que utilizamos para hacer carteles digamos para orientar a los abuelos la fecha en grande. Porque a parte de que no ven bien, y entonces pues el Word sobre todo. Para contabilizar el Excel, sobre todo para contabilizar lo que son las sillas, las caídas que tenemos y ya está".

Besides Intranet programs, employees go to Internet as well. The next interviewee uses internet, for example to check some specific medical diagnostics that she is not familiarised with. This means that Internet represents a source of information; in this case might be seen as she uses it as a tool for learning:

> **(Ha2):** "Si, sí, tenemos Internet en el ordenador y entonces una palabra súper técnica que nos manden en el diagnóstico y alguien que recién sale del hospital y nos manda 'rota escoliosis' . Tu sabes lo que es escoliosis y luego tengo algún libro por ahí que lo tengo para consultarle".

Besides computer equipment, the medical center disposes surveillance cameras. But, the interviewed employee says she does not mind. Mainly, she claims that they are so accustom to them, that they do not even notice them:

> **(Hb8):** " … también tenemos cámaras. A veces lo olvidamos porque ya nos acostumbramos, pero también los jefes nos pueden ver a través de las cámaras".
>
> **(Hb8):** "

The use of new technology is not always easy. The complexity of computer's programs sometime represents a big obstacle in work. Thus, explains the interviewee who has to manage two incompatible programs daily. She finds it frustrating to work in that way, and does not understand why this happens. It is seen as a double, unnecessary effort. She believes that if there were more resources (money or more personnel), this issue might be resolved:

> **(Hb5):** “Trabajo mucho con el ordenador, con un programa. Una cosa que tiene bastante problema porque se trabaja con dos programas. Porque si fuesen fusionados, si programas en uno, no deberías programar en otro. Uno es programa interno y hecho para la empresa, pero como estamos en hospital, tenemos otro programa, el SAP. No están coordinados. Tienes que programar uno y como siempre hay cambios, tienes que estar todo el rato programando los dos. Este es principal problema. Que no están fusionados. Es cuestión de dinero, también. Pero claro también tenemos que estar más personas, también tienen que pagar más empleados, porque... pero se ve que es difícil a fusionar dos programas”.

From this section, it can be appreciated the benefits coming from the use of ICT in health department. There is instantaneous access to all information of the selected patient, his/her medical history, as well as personal information, such as family contact details. Besides the medical staff, the administrative part of the organisation uses the information for monitoring, analysing, planning, evaluating, etc., quality of work activities. Taking all of the mentioned into consideration, the ICT is, and should be considered as the crucial element in work in health area. However, it is important to be aware, on one side its limits, and on the other that in order to have adequate usage of ICT, it is necessary corresponding coaching. When we talk to limits of ICT in health, we think on all the time nurses and other medical staff dedicate to different administrative tasks; those tasks are usually management of information in electronic files, and as it was confirmed, some of the employees still have difficulties in using it, we arrive to the fact that the significant amount of time is dedicated to the secondary activity (see administrative tasks), instead to the primary tasks (attending patients).

Knowledge Transfer / Learning to use ICT

At the beginning, the employees had courses on which they were taught how to use certain computer programs. For some of them, it was like a nightmare. The next employee says that it took her long time to learn how to use them. Now, she claims she masters it. Like a true expert, she surfs trough different tabs and options of the program, finding the desired information or adding new one. The

interviewee is very satisfied with the program, for which she says is fully adapted to the center´s need and requirements:

> **(Ha1):** "… ya lo conocemos, ya se nos hace fácil. Ahora ya sabemos todo. Al principio sí que nos costó, nos costó mucho tiempo para poder acostumbrarnos al programa y conocer cada función. Pero ahora es centrado, pestaña por pestaña, todo detallado. Incluso el tema de familias, también lo podemos incluir. O sea está ahí detallado todo, si tú quieres llamar a un familiar vas ahí. Ya no buscamos en una agenda por escrito. Están ahí las opciones de los familiares y a quien tienes que llamar en primera opción, y están todo registrado ahí".

Unlike the prior interviewee, the next one explains that the change from paper to computer management of files, made her suffer. Although she attended a course of use of the center´s database, she admits she is far of mastering it, and she is obliged to constantly ask help of her colleagues:

> **(Ha3):** "Hace dos años, con la nueva empresa, implementaron un programa para gestionar los partes del día, medicaciones, etc. Lo que anteriormente se hacía en papel, ahora se hace con un sistema. Ahí sí que nos dieron un curso, pero fue para mi gusto demasiado corto y poco claro. Duró un día, nos hicieron una presentación y nos explicaron el funcionamiento. Luego nos pidieron que practicáramos y si teníamos dudas consultáramos con los jefes. Para mi fue un proceso muy difícil, pues no soy una persona que use demasiado los ordenadores. Afortunadamente mis colegas me apoyaron y con mucha dificultad voy aprendiendo".

The majority of the interviewed employees related the learning process primarily to courses and trainings offered by their companies. As the testimonies provided the interviewees show, courses that they receive are insufficient or the poor quality:

> **(Ha4):** "No hace mucho, hará tres años que tenemos los ordenadores. Consiste en que todo, excepto la medicación, todo vaya por programas informáticos. Nos dieron un curso que fue muy corto por supuesto. Yo tuve que aprenderlo en unas horas, que para mí fue poco, según el perfil, como somos auxiliares, claro no es igual que un técnico, tienen otro perfil. El técnico, la enfermera, el fisioterapeuta, el médico, como tienen otro perfil, tuvieron más tiempo de capacitación. A nosotros adaptarnos al sistema nos costó mucho, al menos a mí".

One interviewee says that she and her colleagues made several petitions to their superiors asking for additional coaching in specific areas. Their petitions were not directly declined, but up to that date, they did not receive any course. The interviewee is a mature woman, who says that for her is even more complicated to learn anything related to computers than it is to her younger colleagues, and adds that even young employees have difficulties as well:

> **(Ha3):** "En algunas áreas no me siento bien capacitada, por ejemplo en el tema de los nuevos sistemas, ya lo he comentado varias veces con los jefes, necesitamos más capacitación incluso chicas jóvenes tienen problemas con el sistema, imagínate yo. Pero me da la impresión de que ellos asumen que nosotras o somos tontas o no queremos trabajar con el sistema. Es una lucha constante, vamos tirando gracias a que nos vamos ayudando entre nosotros".

One interviewee explains what it is complicated to work on computers. She uses different programs (software); some of them contain many windows and the use of this software at the beginning was confusing for her. With time, she learnt to use them properly. And despite her training was poor, she says that repeating the same procedures daily, she managed on herself to masters it:

> **(Hb5):** "… que tienes que trabajar con varios. Pues, y hay bastante trabajo. Has de ir con bastante agilidad. A mí, en principio, me costó mucho, algunos programas son mucho más sencillos, pero el nuestro, son muchas pantallas que tienes que ir pasando. Es que, si lo haces, es bastante rutinario. … Un curso con pocas horas, sabes tampoco era mucha cosa, y claro hasta que al final lo que haces es cuando trabajas en ellos, aprendes".

The next interviewee explains other manner to "teaching her" that she experienced when she entered to work in the center. Teaching maybe a strong or even inadequate word to describe it. It was more like a tour through the center, which included the presentation of staff. Besides, they explained to her what their daily work consists of, and that she was assigned to one of the employee who was her guide and support at the very start.

> **(Hb6):** "Cuando entras en el departamento, administrativamente hay una secretaria que está por encima, organizando las administrativas. Esta secretaria te comunica cuál es tu trabajo, en qué consiste. Y normalmente, hay alguna de las compañeras que hace trabajo en

> paralelo o tu vas a suplir porque ella se va a cambiar el departamento porque lo que sea. Normalmente te hacen estar un tiempo con esta persona para que te guíe en tus obligaciones y cuales serán tú... En cuanto hay cambio o... normalmente, se envía un mail".

And the following employee tells a similar story. When she started to work in this company, she was guided at the beginning by the senior nurse; later, she started to guide to new employees. In the pass they used to do all work in paper, but a three years ago the company implemented new technologies (information systems). After the implementation a brief course was given to employees to explain them how the system works. Since they got computers and special software to manage their databases, there were more "teaching" that before:

> **(Ha1):** "Sí, cuando entre sí. La que me enseño las pautas fue la jefa de enfermería. Son ellas las que iban poniendo las tareas de lo que tenía que hacer una enfermera por las mañanas y las que hace una enfermera por la tarde, que son muy diferentes. … en caso nuestro si, tenemos que enseñar a los que no saben. Porque yo he trabajado en muchas residencias y la primera vez que yo usé el Reciplus fue con esta fundación hace tres años. Pero antes nos dieron un curso del tema Reciplus de cómo funcionaba. Porque antes, toda la documentación estaba en soporte papel y para comunicarnos era a través de papel. O sea, había que escribirlo. El ordenador no se usó. Hace tres años que tenemos ese programa".

In the case of health, it has been dedicated more space to analyse the issues of ICT learning process. Questions like, why it is so difficult for medical staff to to handle ICT?, become relevant. Many of the interviewees said that "ICT use" gives them problems. They see ICT complicated and stressful to work with, especially senior (elderly) employees. Younger employees seem to manage it better. Whether if it is a question of motivation, or if there are some other reason that influences the acceptation and integration of ICT, employees are passing through an important transition process without precedents. That is why it is a unique opportunity to observe how this process develops, so that we also can learn from it. We do not refer exclusively to changes in the manner of working, but also to the learning process in which younger employees are instructing senior employees on how to use ICT.

ICT / Comunication

The way of communication between employees changed since the implementation of computers in the company. Thus, the usual way of communication is by email, and a program called “Reciplus”. All employees have access to both, email, and Reciplus. The interviewee explains why this program is so accepted. She says that for all employees, it is mandatory to consult it daily, because it reunites all the information necessary for the work. So, employees adopted it as a tool of internal communication:

> **(Ha1):** “… a través de correo electrónico, hay uno que es el correo electrónico y hay otro que es el Reciplus, es un medio de comunicación que tiene cada profesional. Y entonces, claro hay para enviar de profesional a profesional, y el otro es un correo general de toda la fundación por ejemplo. Pero se usa más el Reciplus, que es todo lo que tiene que ver con el paciente, y toda la información que, por ejemplo le quieres pasar al trabajador social se hace por ese medio. Pero también lo puedes hacer verbalmente. Pero como cada quien está en su área y es continuamente, pues usas ese medio de comunicación más rápido. Pues como todo mundo tiene que leer el Reciplus, es obligatorio y toda la comunicación la reciben a través de Reciplus, porque está grabado ahí el historial de cada uno”.

An interviewee, who works at other center, tells different story. She says that at her work, a lot of information is lost. She believes it is because much communication is verbal there are many intermediate links in the communication channels. Also she thinks there are too many middlemen (superiors). She says that many times people suppose that something is clear, when it is not; that, in her opinion affects negatively a work:

> **(Hb6):** “Se pierde la información desde cuando sale, hasta que llega. A veces se sobreentiende que hay otras personas que lo han hecho y a la persona que tiene que llegarle, no le llega. Porque yo creo que hay demasiado intermediario. Hay demasiados jefes, desde mi punto de vista. Unos dan por hecho que ya se ha comunicado y claro no te llega, muchas veces. O cuando tú te has enterado de esto, tú tienes que arreglar de esto problema. Eso, yo creo que muchas veces se pierde la información”.

Some employees are seen as more traditional; they tend work in the traditional way, to use phone as their preferred tool of communication or face to face. Maybe, because some of them are accustomed to work this way and find it too complicated to changed it at the end of their work carrier.

> **(Hb6):** "Aquí en interno por teléfono. Antes teníamos un radio, yo utilizo el teléfono, porque es inmediato. Y si no me contestan, salgo, voy andando. Es lo más rápido".

And the next interviewee sees it as more comfortable to communicate with her team by phone. It is curious that all the staff has a phone:

> **(Ha1):** "Con el equipo con el que trabajamos nos echamos una mano. Como cada uno lleva un teléfono, pues si necesitas un medicamento de una planta que te suba el medicamento o lo que necesitemos, se puede hacer sí".

Similar to the previous interviewee, this one says uses phone frequently for communication; and even if she claims that the main tool of internal communication is the internal information system, it becomes suspicious when she mentions that they use daily a very popular social network, whatsapp:

> **(Ha3):** "Principalmente nos comunicamos a través del sistema interno, porque en el reflejamos casi toda la información y todas las personas lo pueden ver (enfermeras, médicos, jefes, fisioterapeutas, etc.). Además utilizo mucho el teléfono para comunicarme con compañeras, sobre todo si están en otras plantas. Por último el correo electrónico. Cada vez utilizamos más el Whatsapp".

The following interviewee explains the internal communication process with more detail. She says that fifty percent of communication is through the program Reciplus, and other fifty percent verbally. But, if cannot communicate with the colleague personally, she writes them a note. She insists, that if something is very important, then it is necessary to put it in written form in order to avoid the lost of information. For that purposes, usually email is used. The interviewee criticises the abuse of emails by some employees. She claims they use them excessively, and that this creates other sort of problems. She also

does not understand why some of them prefer emails to face to face communication:

> **(Ha2):** “La mayoría (de la comunicación) con los gerocultores es por el Reciplus, pero al menos lo mío el 50% es escrita y la otra parte oral, vamos o sea en persona. Si yo le tengo que decir algo a una persona, se lo digo a ella o más, se lo dejo escrito. Si, sobre todo si son cosas muy complejas se tiene que dejar rastro. Pero hay muchas personas que prácticamente se comunican por el correo electrónico. Tenemos un correo interno y no son capaces de decírtelo en persona. Entonces eso es muy bestia porque igual te lo escribe a las 12 y tú lo lees a las 8, y si no lo vuelves a abrir el correo, no te enteras”.

Here, it is presented how the work space influences a way of communication. The interviewee says that, before been transferred to a new and bigger building, they worked in small center. Due to the fact that it was a small place and they did not have phones or emails; they were use to communicate face to face. She says that the majority of the employees kept that old habit, meaning to speak face to face:

> **(Hb5):** “Tengo contacto con muchas personas; nos reunimos, hablamos, a veces durante desayuno, 8, 10 personas. … Cara a cara es la comunicación preferida. Mail casi nunca y teléfono sí, pero más cara a cara. En el antiguo edificio no teníamos teléfono y eso tal vez influya nuestra comunicación en este nuevo centro en que todos ahora tenemos teléfonos. Todavía tenemos costumbre a ir y hablar”.

The next employee presents herself as very obedient. She does what her boss asks her to do. Usually, her superior talks to her in person, sometimes she sends information by email. The interviewee says she likes both ways of communication; face to face communication likes it because it implies interaction with persons, while electronic communication is more visual (have visual effects mainly related to documents):

> **(51):** “Hago lo que me dice mi jefa. A veces nos convoca varias para comunicarnos, a veces nos habla una a una. Alguna vez (parece raramente) nos envía (su jefa), un correo electrónico. Pero más boca a boca. Me gustan ambas manera de comunicación; uno es más personal para interactuar, pero otro lo visualizas más, por ejemplo si son unos documentos”.

Another employee points out the importance of phone as a tool of communication. She mentions that emails are also used, but with less frequency. She explains that it is because all emails are registered and, even if it is good from the point of view of saving important information, some employees do not like it because of that, the fact that their written words keep saved.

> **(Ha4):** “Tenemos teléfonos en todas las plantas, en todas las áreas hay teléfonos. También utilizamos correo electrónico. Si los corres de todos los tenemos, incluso el del director. Normalmente los correos electrónicos los usamos de manera puntual, si pasa algo, o si hay alguna incidencia. O cuando falla la comunicación entre el equipo, usamos el correo electrónico y va también directo a dirección. Los correos quedan grabados y a mucha gente no le gusta, sin embargo en ese sentido son muy buenos porque queda la información guardada. Yo encantada, porque como todo queda reflejado, no pueden decir que no les hemos dicho”.

Daily meetings are understood as one of the most important ways of communication, and work organisation, at least it is perceived from the list of communication preferences offered by the interviewee:

> **(Hb7):** “El sistema de información de la empresa, el correo electrónico y el teléfono y por supuesto las reuniones diarias de equipo que tenemos cada mañana”.

The main means of communication resulted to be: “phone”, “email” and “face to face” communication. The traditional way of communication “phone”, proven to be more popular than “email” or “face to face" interaction. While phone, as a tool of communication between employees of one organisation, is used by both young and senior employees; it seems that new ways of communication like “email” are winning in use by younger members. Senior employees tend to communicate more by phone that younger; they also seem to be less active in the use of emails, they used unless it is truly necessary. Younger employees, on the other side, highlight the importance of information saved in the form of email, and believe that in that way there is evidences of work that have been

done; on the contrary, the information can be easily lost. But then surges another problem- saturation of emails. The abuse of emails is common problem in many organisations, and this topic is object of many studies. For more informal communication it is used a popular social network “whatsapp”. For that purpose, young employees use their personal mobiles. To resume, the results show that there is a use of certain new ICT in communication. However, this use is limited basically on one part of the employees who use emails, which today are not seen as new hi-tech tools; and Whatsapp, which is a new way of interaction, but in this case it belong to non-official ways of communication. This proves that organisation did not put at disposition other methods of communication to their employee because they consider that the one they have are satisfying or simply do not invest additional resources on that.

Problems related to use of ICT

Everyone who ever had a contact with a computer knows that sometimes it acts as a capricious child. It will not to do what it is ask to do, or it is very slow on executing it. Occasionally, it simply stucks, and then it needs to be rebooted. In other occasions, it is necessary to search help on internet or even to get help phoning a technician. Then, passwords which change periodically, for the reason of security. The next interviewee explains what she does when her password is expired. Sometimes, when she has to use database, her password is expired and the person in charge to manage passwords is absent, she asks to one of her colleagues to log in to the system, and then she consults or enters information. But, then the information gets saved on her colleague’s username:

> **(Ha4):** “No, no es más rápido, que va. Entre que se cuelga. Se cuelga mucho, eso es un fallo técnico. Más que todo tiempo, pérdida de tiempo. … Si, si, va lento, cada cierto tiempo va lento. Tiene que venir el técnico y te dice ya iré, ya lo arreglare. O te caduca la contraseña y entonces no reflejas lo de ese día o usar la contraseña de otra persona para reflejar tu trabajo. Tienes que esperar a que venga la encargada al otro día para que te dé el cambio de contraseña. A mí me gusta que puedas reflejar que has hecho tu trabajo, pero luego es una pérdida de horas. Se te cuelga, y no siempre puedes usar tu contraseña, a veces tienes que usar la de otra persona. … Así es, cuando tu lo haces debes

> indicar que lo hiciste tú con la contraseña de otra persona, pero eso lo tienes que hacer tú, porque el sistema no te da opciones. Tienes que espabilarte tu mismo".

The following interviewee complains. She insists that there are too many tools that the system offers. It appears that she has trouble using it, and tries to justify it by saying that everyone has their own way to use tools. Then, the interviewee says that all employees did not have access to the same quality of training, which contributed to different speed of learning:

> **(Hb8):** "En cuanto a información, casi todo lo tenemos en el sistema o en algunos archivos. En capacitación nos podían apoyar más, son muchas las herramientas que utilizamos y cada persona tiene su forma de usarlas, depende a quién le preguntes te dirá algo. Considero que deberíamos enseñarnos a todos igual".

It is interesting how the employees sometimes contradict themselves; like it does the next interviewee who, on one side, criticises the inefficiency of the computer program, commenting that it takes too much time to maintain the system updated with all information that has to be registered in it; while on the other side says that before the implementation of electronic files, everything had to be done manually (handwriting on the paper), meaning that many issues were left over. Maybe, here the main issue is not the slow execution of the program, but rather that the program is not fully adapted to their needs, or even that the process of work defined by the management is not compatible with the program requirements:

> **(Ha4):** "Lo que no veo bien del programa es que quita mucho tiempo reflejar las cosas. Es bueno el programa, pero creo que falta tiempo. Entre el trabajo y el programa no hay suficiente tiempo. Antes se escribía en un papel y muchas cosas no las registrabas".

In previous section it has been discussed the issue of use of ICT. The focus was on the employee trying to overcome basic obstacles which implied adequate use of computers for everyday tasks, some of this obstacles are low training, complex systems, too much work to maintain systems and databases updated, problems related to password validity, etc. Although it is an obvious problem for not so small number of employees, it

appears another issue that is causing frustration for both, administration and rest of the employees; the equipment that sometimes does not function properly. This specially refers to computers, and computer programs which sometimes are too slow in execution, or screens that freeze, no Internet or Intranet connection, programs´bugs or malware issues, etc. It is not unusual the use of two or more programs which are not mutually compatible. This situation is recognized by the management of the company, but not attended. Thus employees are condemned to search on their on solutions, and alternative paths to resolve this issues. It usually takes additional time and effort, which naturally are not acknowledged.

4.1.7 Interpretation and analysis of the empirical results

Conclusion Social Capital: It has been found that there is a lack of good organisation and planning which is attributed to mediocre and incompetent CEOs and companies managements. For that reasons, there is a continuous accumulation of work, which ends in overwork, work out of work hours which is not paid, and general dissatisfaction. Additionally, with the existing precarious work contracts, and confronted clusters that impede quality teamwork, the managements do not appear as a factor that creating/defining good working climate. Due to this climate, it is not surprising the low level of trust in the leading structures of the companies. The positive point surge in interpersonal relationship between employees which due to their close personal tights manage to create more productive collaboration that can be appreciated in the final result of their work. The employees despite their enthusiasm to innovate, and improve their company's functioning, not only is discouraged and not acknowledged, but in occasion despised as well. It has been detected that daily briefings are far more efficient that endless reunions that are thorough documented.

Conclusion Knowledge: Knowledge is alpha and omega of every activity. In the area of health, its role is particularly important. Treating persons with specific medical conditions require a permanent updating of knowledge. We are living in the era of explosion of discovers in many scientific fields, here understood in medicine as well. There are fusions of the scientific disciplines that in the past were unimaginable, like medicine and engineering, or biology

and engendering, today better known by the name of bioengineering. We, as a civilization arrived here by investing in education, acknowledging and rewarding the best pupils, students, researchers and workers. The personal effort of those paid out. But, something happened. It seems that information gained terrain of knowledge. Organizations and companies stared to compete which one will capture more information. For that reason, they stared to invest more in technology, see computers and computer programs. Computers fed constantly with new information, and equipped with powerful algorithms which permit them to act more accurate and faster than persons. Maybe in that fact relies a justification of companies to invest more in computers than in employees, although we must ask ourselves whether we would prefer to be attended in a hospital by a nurse or by a robot.

Conclusion ICT: The usage of ICT is presented as ultimate tool to access to great number of data and information in time record. Thus, its is not a surprise its use in all imaginable fields of human activity, such as work, research, studying, leisure, art, sports, etc. We, humans, are social animas, like Elliot Aronson´s says in his book. Today, we express that characteristic through the use, and in some cases abuse of ICT. Unnumbered amount of web pages and apps are dedicated to interconnect a millions of persons all over the world. In that sea of persons and information, one can easily get lost. The same happens when ICT is used for the purpose of work. In the case of medical staff, they are lost in their new tasks which involve saving all the information, reports, etc., in electronic form in the organization’s database. Their primary activity, which is attending patients thus rest in the second plan. Are we arriving to the point where medical personnel will know more about administrative tasks, then how to attend patients, like bakers from the Sennett´s book.

4.2 Second case study – Food Industry

4.2.2 Introduction

The food industry is composed by a great diversity of businesses that supply most of the food consumed by the population. Only subsistence farmers, those who survive on what they grow, can be considered outside of the scope of the modern food industry.

The food industry includes:

- Agriculture, that also considers rising of crops, livestock, and seafood.
- Manufacturing, this includes agrichemicals, agricultural construction, farm machinery and supplies, seed, etc?
- Food processing, which includes preparation of fresh products for market, and manufacture of prepared food products.
- Marketing, that considers promotion of generic products (e.g., milk board), new products, advertising, marketing campaigns, packaging, public relations, etc.
- Wholesale and distribution, which includes logistics, transportation and warehousing.
- Foodservices, which also includes catering
- Grocery, farmers' markets, public markets and other retailing
- Regulation are also an important part of the food industry, it includes local, regional, national, and international rules and regulations for the production and sale (including food quality, food safety, marketing/advertising, and industry lobbying activities).
- Education.
- Research and development.
- Financial services.

Food industry is also an important and strategic sector for any country. Nowadays when technology is present everywhere; food industry is not the exception to the rule.

In last years more and more technology has been integrated to the food industry, from industrialization of the processes to robotics, and from bar code to internet sales and distribution. Nowadays practically any business related to food industry is excluded of the use of information technology. In this globalized world, Information technology is a very powerful tool to control and move goods everywhere. From very big wholesalers to small stores almost all of them use Information technology in order to optimize the business and be capable to survive and provide a good service at the lowest cost. In this context, it becomes almost impossible to survive in the food industry without using information technology.

As food is a primary good, it is relevant to understand the way in which Information technology could help to the food sector in order to supply goods to the people in the most efficient way and at the lowest cost. It is not only an economic issue, but a very important social problem.

4.2.3 Methodology

Eight semi-structured interviews were done in two companies of the food sector (four interviews per company). Four semi-structured interviews have been done in the company that we will call “A” (for confidentiality issues). The company has around 100 employees and it is located in Barcelona, Spain. It is dedicated to the production and commercialization of food. Their workers include general workers, engineers, administrative personal, management,staff, etc. Most of the people working in this company is in the range of age between 30 and 60 years old.

Four more semi-structured interviews were done in the company that we will call “B” (for confidentiality issues). This company has around 150 employees; it is located outside Barcelona city. The company is dedicated to the production of food which they sale to resellers. Most of workers are general workers in the production lines, there are also engineers, administrative workers (staff). Most of the workers are men and most of the high ranking positions are occupied by men. In this case most of the interviews were done inside the company; however, one was done in the house of the interviewed.

All interviews done have been transcribe into word, the most important ideas were selected and passed to a excel database, where they were they were classified and linked to the concepts extracted from the literature review and with data extracted from other interviews.

The methodology used in this case is explained in detail in the methodology section of this research. In the next section field research procedures and methods applied are presented.

4.2.4 Field research

4.2.5 Characteristics of study participants

Table 8 Characteristics of interviewed participants in food sector

Food								
INTERV. CODE	AGE	GENDER	STUDIES	POSITION	LEVEL	TIME IN WORK (Yr)	EXPERIENCE (Yr)	INTERVIEW DURATION (mins)
Fc1	55	Femle	Medium	Director	High	12	20	37
Fc2	34	Female	Medium	Administ	Medium	3,5	3	49
Fc3	28	Femle	Low	Administ	Low	2	5	26
Fc4	37	Male	High	Administ	High	3	10	43
Fd5	44	Male	High	Administ	Medium	5	10	45
Fd6	46	Male	High	Administ	Medium	15	20	60
Fd7	26	Male	High	Administ	Medium	2	2	35
Fd8	46	Male	High	Director	High	15	20	50

4.2.6 Results of interviews

In the food sector case are analysed three major topics that include: social capital, knowledge and information and communication technology. Each of the three mentioned themes consists of the most relevant and related variables that were included in the interview guide. These variables were used with the objective to explore how the food businesses and their employees manage these topics. From the interviews were obtained rich information that enabled the following analysis.

Social capital

In this part are analyzed the most relevant topics of social capital, including organizational culture, coming from the interviews conducted in the sector of food. The study begins with analysis of work environment, stress at work and their influence on employees and their work, how the policies of work

promotions inside the companies function, in which way the companies organize the work, the level of trust between the employees of different positions inside the company, the quality of interpersonal relationships between employees, and the bosses, the presence or absence of camaraderie between the co-workers, the presence or absence teamwork and collaboration, and politics of awarding that companies apply.

Working environment

For some interviewees, the work environment is defined as good, for others is perceived as somewhat stressed, but overall, it seems to be evaluated as positive. It should be differentiate that who are more optimistic are those who are highly positioned in the hierarchy, and less optimistic those who do not have power to take any crucial decisions.

The next interviewee states that, although sometimes there are situations of tension, it does not affect the work climate. This interviewee is one of those who occupy am higher position. Furthermore, she claims that there is a mutual respect between the employees which does not exist in other companies:

> **(Fc1):** "El clima de trabajo es bueno. En general es bueno, por esto estoy 28 años en este trabajo. Bueno en general, evidentemente hay tensiones, como en todas partes, pero hay buen clima de trabajo, no hay escapadas para pasar encima de los demás que hay en otro mundo".

In addition, the same interviewee affirms that the specific work atmosphere in her company is due to its social characteristics. Naturally, the employees were selected starting from their ability to identify themselves with the social values typical for this specific sector. This cooperative business company conduct psychological tests to determine the level of satisfaction of its employees:

> **(Fc1):** "Por ser tema social creo que esto nos identifica bastante y en general estamos rodeados de gente buena. A veces estamos saturados pero tampoco creo que sea una norma extraña. Nos

> hicieron test psico-técnico a todos para ver qué grado de satisfacción tenemos y salió que todos estábamos porque nos gustaba el sector. Otra cosa es que a veces tenemos juntas a las que vamos estresados, esto entra dentro de lo normal".

The next interviewee depicts the working environment as informal and no-relaxed. Her role as a supervisor is to guide young employees, and she insists that certain grade of rigour is necessary. At the same time, she tries to help them out with their special needs, that sometimes cause problems at work, and she admits that it consume great dill of her time. Working with persons with special needs, evidently, require patience, compassion, and willingness to assist them, and therefore those who assist them should be persons who understand those conditions and, in the certain way, consider this type of work as vocational.

> **(Fc2):** "…es informal y no relajada. Informal porque el trato con los chicos lo hace así, por el tipo de actitud que tenemos que tener ante ellos. Y luego la parte formal es todo lo que lleva el tratar con un cliente y tratar con los proveedores de productos de limpieza. El trato con los chicos es serio, pero tiene una parte más informal, no se más tranquila, bueno tranquila no es la palabra porque vamos a un ritmo muy acelerado, es mucha gente con la que tenemos que tratar, muchas necesidades imprevistas de los chicos, muchas cosas imprevistas que al final del día te andan comiendo. Llega el final del día y dices ¿que he hecho?; bueno he hecho muchas cosas pero no las que quería hacer. Es entre informal y formal y hay días más relajados que otros".

This employee considers that she is well integrated in the company, and says that although the company is big, she feels as a member of its family. She claims that to the good work environment contribute equally upper-level and lower-lever employees:

> **(Fc3):** "… muy, muy integrada, si. A ver lo que ocurre, es que aunque es una empresa grande, es como familiar, es bastante familiar entonces bueno, hay buen ambienta tanto a compañeros, jefes bien hay muy buen ambiente"

Another employee who says the work atmosphere in the company is good, but in her opinion it is not thanks to bosses. Quite the contrary, she affirms that superiors are too permissive because they have to supervise/have in charge/ numerous employees, distributed in different locations, and overall they are not in situ to control or to promote positive work environment:

> **(Fc4):** "El ambiente de trabajo es bueno, los jefes nos dejan hacer, más que nada porque no pueden estar en todas las tiendas para supervisar a 27 personas".

Unlike all the previous testimonies, this gave positive opinion about their work environment, the next one presents his work place as very competitive in which everyone pretend to reach their particular goals. Therefore, this opinion is classified as negative:

> **(Fd6):** "… aquí también es muy competitivo y cada uno quiere promocionar y bueno...".

Generally, the interviewees describe their work environment as positive. Only in one case was produced the concern due to the competitive environment in which some of the employees were guided by their personal goals, and less by the interests of whole department. Otherwise, the working setting is perceived as pleasant, and relaxed, although no too much relaxed. Meaning, there is a mix of formal and informal, in which job positions define certain limits. In the cooperative company, it was said that they take care about their employees work satisfaction, and that in that purpose they even conduct occasionally polls.

Stréss

In this section is analysed what is or are factors that cause a stress at work, as there was previously established that there are some situations which employees characterised as periods of anxiety or stress, and for some, pressure. In the next lines are presented statements that illustrate those

situations; how the interviewees deal with them, and what they consider causing them. Furthermore, the interviewees describe which strategies they use to confront the stress, and give their opinion how it can be avoided or reduced.

In many testimonies was detected a factor of stress related to accumulation of work. Thus, one employee points out critical moments, such as Christmas, when she experience significantly more stress situations:

> **(Fc3):** "... estrés depende, depende, por ejemplo en la época de Navidad, sí que hay mucho estrés, hacemos muchos lotes. ... Pero en general el ambiente es muy bueno, mejor tener faena, puntuales, no, no, no, no, para nada".

Different persons experience differently situations of stress at work. The next employee explains how she copes with it. First of all, she insists that it is not continuous stress. Secondly, it does not last long, just a couple of days. And third, she does not perceive it as something negative; she calls it ´healthy stress´. Her approach in handling stress situations consists in exploiting her work experience which she acquired during the years in the company:

> **(Fd6):** "... cuando con lo de la vida familiar llevas más estrés, luego en el trabajo aprendes ser más pragmático y yo no al menos no me estreso como antes. Si que hay estrés, porque es claro vives un estrés, pero es un estrés que yo lo llamo "sano", es el estrés de trabajo, que te puede pasar 2 o 3 días pero no es un estrés continuo ni es un estrés malas distribuciones de cargas".

Another employee considers that is more question of pressure that stress, although he admits that in his new company he experiences less pressure that in the company he worked previously. This testimony differentiates from others, as the interviewee points out the good organizational planning that prevent accumulation of work:

> **(Fd7):** "El cambio principal es que no hay tanta presión, el tipo de presión… la presión de deja de existir. Es cierto, que la carga de trabajo es distinta, ya no es.... Pero eso no quiere decir que no hay jornadas de este tipo. ... hay planificaciones desde arriba y hay que cumplirlas si o si. Otra diferencia, el cambio principal es que no hay tanta presión quizás requiere menos jornadas maratonianas. Pero

> eso no quiere decir que no hay jornadas de este tipo. ... hay planificaciones desde arriba y hay que cumplirlas si o si. Otra diferencia, el cambio principal es que no hay tanta presión".

The accumulation of work seems to be a trigger of stress at work. As many interviewees confess, they often feel overboard by amount of work, although they admit they it is not a permanent condition and usually last a short period of time. Some of them are used to work under a stress, and developed their own strategy to overcome it. Thus, one employee arrives even to call it a ´healthy stress´. One interviewee believes that it is not actually a stress that he experience, but rather a pressure to meet a dead lines. As it can bee seen, those situations of stress situations or situations of pressure, cause by accumulation of work, are cyclic and repeated. The origin of this problematic might be in the fact that there is an extended use, of what can be named, not well adapted work planning and organisation. The solution of this problem is in the hand of companies' managers, which are only that possess real power to change it.

Organización empresarial/modo de trabajo

There is wide/broad spectrum/variety of organisation models which define how the concrete company operates. Some of them are purely and exclusively guided by the profit, other not. Besides, in this part are described how the traditional way of work is transforming as a consequence of introduction of new technologies, what it affected some of the employees that work for long time, and how they adapted to this new form of work.

The example of the last one is the company in which works the interviewed employee, who provided us an inside view/impressions about how one cooperative type of company functions. The employee, who occupies top level position in the company, says that all the employees have a vote and decide about the company's destiny:

> **(Fc1):** "Somos cooperativa, que es una cosa que es muy buena. Que tenemos poder de decisión. Yo formo parte del consejo rector y soy la

> presidenta, por lo cual tengo voto, pero todos los trabajadores tienen voz y voto, con lo cual no es que la empresa decida hacer unas cosas y los demás acaten. Entre todos se votan las cosas que se considera que son necesarias, que evidentemente las propone la gerencia pero la gente las vota y terminamos haciendo lo que la gente dice".

However, even if all employees take part in company's decisions, the company is not entirely flat; meaning that there is a classic hierarchical structure that defines clearly everyone's rights and responsibilities. The interviewee insists that, being the cooperative company, they dispose the capacity for autoregulation which differentiates them from other types of companies:

> **(Fc1):** "Evidentemente la empresa tiene estructura piramidal. Por muy cooperativa que sea, una persona tendrá tareas de más responsabilidad y va en decremento, cada uno tendrá sus tareas y cada uno tiene objetivos a conseguir, pero al ser cooperativa tiene capacidad de autorregulación, creo que es lo que principalmente nos caracteriza".

In the other food organisation that participated in this study, which is a typically profit oriented company, employees claim that the company is only interested in final score. The interviewee claims that the company values ultimate results, and that teamwork, cooperation, etc. are in the second plan:

> **(Fd8):** "La empresa va muy por los resultados y me da la impresión que ese es el valor más importante para ellos. Después si hablan de trabajo en equipo, cooperación, etc.".

One of the lower-positioned employees in the cooperative company explains which approach bosses have towards them. She says that her superior insists in explaining them every detail making them understand why something is done in that specific way and not some other way. Like, for him, the background story is important to be said and reasoned in order to be accepted by the employees. This approach seems to be well accepted by the employees:

> **(Fc3):** “Bueno eso es el director de tienda el que nos da las pautas, las directrices para ver cómo tiene que ir todo colocado, puedo pensar que todo aquí va muy bien, pero lo que son las dos tiendas tienes que seguir lo mismo, los lineales, la estructura, el producto, todo tiene un porque, no como yo quiera colocarlo, si comentarlo si, eso siempre, podía ir aquí o yo pienso y si creen que es bueno pues si te lo aceptan y sino ellos te explican por qué no o el porqué de esto está así…. El jefe es el que lleva las tiendas y es él que nos explica los productos,... Nos explican, nos forman, una técnica de venta de porque se tiene que vender así, o de otra manera, eso sí”.

The next interviewee talks about her perception of how the manner of work has changed in last seven years due to penetration of new technologies. Despite initial problem in adaptation to use the mentioned new technologies at her daily work, she talks about, on one hand, positive sides which they brought such as instant information about sales, products, inventory, etc., and on the other hand, negative sides that refer to significantly more exigency

> **(Fd5):** “Algunas cosas me han costado, pero ahora ya conozco bastante bien mi trabajo. En 7 años ha cambiado mucho la forma de trabajar. Ahora usamos mucha más tecnología y se exige mucho más. Ahora todo es visible, casi al instante, ventas, inventarios, costos, etc.”.

What it can be concluded on the base of the data obtained from the interviewees in this segment is, that the business model influences the organisational culture of a company. Here, in concrete, are differentiated two types: one which is purely guided by the profit, considered a classic company, and other which is defined more as a ethically organized company that emphasis the importance of integration of socially discriminated category, referring to disabled population, and therefore is categorised as a cooperative type of company. Although both companies have pyramidal organisational hierarchy, in the first one it is more prominent, while in the second it is less apparent the distribution chain of command. In the cooperative organisation, as the interviewee confirm, all employees are considers as members of one large family, in which despite different positions and responsibilities, they have a vote. In the profit guided company, employees do not enjoy the same privilege that

refers to active participation in taking decisions, nor are considered important asset to/for company. As an executive of the cooperative company affirm, they highly insist in treating their employees with respect, value them as a persons, and take care of them, which do not happen in other types of companies.

Trust

Trust represents an important element in a successful function of one company. By that, we understand that there is a fluent and open communication channel, which allow fluent flow equally horizontally as vertically, meaning that there are good quality communication, based upon a mutual trust between superior and subordinate employees and employees with the same status/level. The data obtained from the interviews, in that sense are considered rich, as contained valued information which illustrates similar yet different perception of trust, depending on the position an employee has in a company.

Thus, the employee who is one of executives confirms that she does no make any difference whether she speaks to a pedagogue or so-called a blue-collar worker with a intellectual disability:

> **(Fc1):** “Hemos conseguido el mismo nivel de confianza. Es decir lo mismo hablo con la pedagoga que con un chaval con discapacidad que es un peón”.

She furthermore adds that she involves herself even more personally because she is in charge of team that organise a work of psychologically disabled employees. The close contact with the families of those workers provides also useful information that facilitate management:

> **(Fc1):** “Es muy fácil que la gente pique la puerta al despacho abra y te pregunté una cosa. Se me hacen muy cariñosas las personas con discapacidad. La relación que se tiene con las familias es muy cercana; tú sabes cual es el problema de cada uno para poderlos acompañar en el trabajo”.

The similar store repeats the next interviewee. She says she has an open-line for her subordinates that they use to ask for assistance or advice:

> **(Fc2):** “Si yo ya les he dicho que cualquier duda o cualquier cosa que no duden en preguntarme porque bueno para eso estamos, que cualquier cosa que necesiten vengan y me digan”.

But, this interviewee’s speech change slightly when she refers to equal level employees. In this case, she claims to have more trust in her fellow-colleagues with which she shares the same premises that with those who work in other location and to which she usually contact by phone. It means that she implies that the factor of physical presence is what influence level of trust, although it sometimes might provoke misunderstandings and conflicts:

> **(Fc2):** “He congeniado con gente mucho en el teléfono, también en el local hay una de las compañeras con la que me llevo muy bien y tengo la confianza de hacerle preguntas de esto como lo ves…, cambia un poquito no es la misma confianza que puedes tener con los de aquí, incluso el que estén aquí lleva a que incluso algún día tengamos una discusión, más que con los de fuera, bueno si cambia un poquito pero tampoco tanto”.

The following testimony is more centered to activities related to trust. As this employee sees it, the key issue is to the possibility to expose freely proposals on one hand, and on the other, have a capability/capacity to listen, learn and analyse the proposed idea. This employee, who is a team leader, explains that it is essential the existence of mutual trust between different-level employees in order to carry out successfully one project. The trust is foundation of teamwork and good team results:

> **(17 TMB):** “Si, yo con mi gente lo propongo y, me gusta proponer y escuchar. Porque creo que ellos también aportan mucha experiencia y a veces, yo he trabajado como ellos en el campo. Pero vengo de una parte más técnica de proyecto de redacción, luego yo complemento. Es decir, ellos proponen... pero por mi parte es más técnicamente.....y complementamos un poco. Y eso es que a veces digo a ellos, les falta el tener que redactar. Pero los dices, va te

> pongo como objetivo escribir esto.... que les intenta a poner algo para que mejoren, pero es como un drama (rie). Si quieres a evolucionar, tienes que aprender otros.... Pero a veces les cuesta, porque todo lo que te comporta un trabajo extra, siempre cuesta".

In this part, it is generally confirmed that there is trust among the employees, indifferently which position they occupy in the company.

In this part are perceived two principal views related to the topic of trust. One coming from the upper and mid level employees or and other lower levelled employee. In the first case, superiors defend the thesis that they subordinates trust them and that they approach them freely when they need some advice or to consult them. The other side, when in the case of mid level employees, they treat to theirs equal, then the discourse change a bit. The interviewee differenciate location as a factor of closeness and trust. Bla bla. The last interviewe empahasis the importanceof trust as a key facor of teamwork.

Although in this part was generally confirmed the existence of trust among the employees, it was also perceived that there were two principal stands that were somewhat different: one coming from the upper and mid level employees and other from lower levelled employee. In the first case, superiors defend the thesis that their subordinates trust them, meaning that subordinates can approach them freely when they need some advice or to consult them. The other side, the lower level employees interact to theirs equals differently then their superiors. It seems that they tend to trust more their fellow-colleagues that their bosses. On of possible explication for this phenomenon could that they fear consequences that can be produced by admitting for example some error they committed or something similar. One of the interviewee suggested that the ubication can influence the trust. In other terms, the closer the fellow-colleagues is, the greater is possibility of trust. This view can be explained by the fact when persons are closer in space, they interact more, and therefore, it produces more personal contact and trust, and reinforce teamwork. This position should be taken with caution, as it can also go on other direction, provoking discomfort

Interpersonal relationships

The importance of good interpersonal relationship between employees is considered important by the interviewees. With some co-workers have closer contact, with others less, depending on individual characteristics of both. Some of them try to get on with theirs colleagues, with whom they spend many hours working, as a part of a strategy.

The next interviewee offers an executive perspective of how are interpersonal relationships in her company. The interviewee says that there are good interpersonal relationships between employees due to the lineal treatment they enjoy in this cooperative company. She continues, adding that the good organisation of work trough the specific forms, determine different methods of contact which allow fluid interaction between different-level employees:

> **(Fd1):** "Termino medio, tenemos buena relación entre nosotros pero solemos mantener las formas. … A pesar de que somos muy grandes, yo creo que el nivel de relación de la directiva con los peones, de la directiva con los mandos intermedios o con todo tipo de cargos dentro de la empresa, es muy fácil. Aparte de que hay métodos de contacto, que son asambleas y consejos rectores, que es además lo estipulado por la ley. … En general el trato es muy lineal con todos los estamentos de la cooperativa".

Curiously, the same interviewee, offers in the continuation considerably different discourse. She makes it clearly that she is a person in charge, an executive, and that from her position it is more complicated the issue of relationship with her subordinates. She wants to be accepted as equal out of working hours, but respected as a superior during the work hours by her employees. From her point of view, the conflict at work should not be transferred onto private sphere and should not affect personal relationship out of work:

> **(Fc1):** "Desde el cargo que yo ocupo es difícil. Yo creo que es importante que la gente te traté de igual a igual cuando estás fuera del trabajo. Que yo tenga discrepancia con una gente por un tema laboral no quiere decir que esa persona les caiga mal y que después no quedemos para tomar una coca cola. Una cosa no tiene que ver con la otra; yo creo que está bien separar las cosas y que salgas y te

> relaciones con la gente, que le tengas más cariño, que te caiga especialmente bien y que eso pasa en la vida normal y corriente, y con los otros tengas una relación normal de compañero pero ya no va más allá, porque claro con todo el mundo no podría ser. Hay gente con la que tienes relación más estrecha más laboral".

The value of good interpersonal relationship at work can be employed as a strategy which facilitates daily work, as it implies the following interviewee. She says she is aware that her work actually is related to the work of her co-workers, and that she depends on their work, the same as they depend on her work. That interconnection and complementarity of work between different employees is why she insists in maintaining good relations, that in her opinion enable easier and more efficient execution of work tasks:

> **(Fd5):** "Mi trabajo como te dije es una parte individual pero la parte más importante yo diría que es grupal, por eso para mí es muy importante tener buenas relaciones con mis compañeros del grupo. Pienso que de alguna manera siempre se gana cuando mantiene uno buenas relaciones con los colegas de trabajo. No con todos se gana y no es fácil mantener buenas relaciones con todos (algunos lo ponen bastante difícil), pero se intenta y siempre es mejor tener buenas relaciones que malas".

The next employee considers as well that good interpersonal relationships between colleagues help a work to be done. Her efforts go in that direction, even with the certain co-workers with which she does not have especially affinities/likeness. Her objective is to keep correct professional relationship that allows her to do her part of the job:

> **(Fd8):** "Es como todo, con algunos muy buena relación, con otros regular; mala con nadie tengo 8 meses en la empresa y afortunadamente no he tenido problemas con nadie. Lógicamente intento llevar las relaciones lo mejor que puedo incluso con los compañeros con los que no me agrada mucho trabajar. Es un trabajo y debemos ser lo más profesionales posibles. Digamos que hacemos lo mejor que podemos para llevar una relación cordial y poder trabajar".

The next interviewee describes situations in which surge conflict and how she manages it. Her strategy in managing working conflicts between her subordinates is confronting them separately and depending on their character lead to conflict (re)solutions/ reconciliation. She explains that it might result difficult sometimes to mediate because there is also a rivalry involved. And, although she believes that there are less conflicts between male employees that between female employees, she says it happens frequently:

> **(Fd6):** "… a veces, yo tengo un grupo de trabajo, de los cuales algunos llevan años haciendo cosas, otros son nuevos,... Rivalidades luego forma de decir las cosas… - yo se más que tu... cada uno tiene su carácter y veces cuesta. Tienes que saber tratar a cada uno por separado, como cogerlos y a veces los metes en una mesa y que se peleen. (ríe). Es complejo, y eso que yo me considero una persona que he trabajado toda la vida con hombres y pienso que es más fácil trabajar con hombres que con mujeres, pero también son rebuscados".

In this part it was confirmed, as expected, that the majority of interviewees declare there are good interpersonal relationships between employees in their respective companies. However, there were revealed some situations of ´conflicts´ that superiors experience with their subordinates. The separation between private and professional sphere resulted to be complicated for those who occupy higher position in the company, even in the cooperative type of company where it is promoted more lineal contact between employees. Despite the occasional outbreak of rivalry, it can be concluded that the quality relationships between employees is a valid strategy that make everyday work easier and therefore enhance the efficiency.

Relación que tiene con sus superiores/jefes

The working environment can be marked by the influence of the bosses or superiors. That is why it is considered important the existence of good relationship between employees and their superiors, and vice-versa. One of the variables that evaluate level of trust and integration in the work group is a

predisposition to propose/expose freely new ideas and comment issues related to work. In such setting, employees and their superiors tend to develop certain relations in which the barrier boss-employees is less rigid, and more oriented to new solutions:

> **(FC4):** "Sí yo tengo una idea o los jefes tienen una, nos escuchan con una mente abierta. Hay conversación, no es el jefe- jefe, son abiertos. Evidentemente se hará lo que ellos digan, pero te escuchan".

On the example provided by one interviewee, it can be seen that in his company there is close contact, even complicity between workers and superiors. One could think that they consider as equals. However, the interviewee is conscious that there is invisible line between them, and he shows him (to his boss) respect:

> **(FC4):** "Los jefes son muy llanos, la diferencia no está muy marcada, evidentemente ellos son los jefes, y se les debe un respeto como si fuera mi compañera, aquí nos respetamos todos. Mientras se sepa el lugar de cada uno no hay problema. El jefe o jefa aparecen por la puerta y "Hola compañera".

The following case presents that close relationship with the superior can serve to exploit/abuse. The interviewee explains how his boss abused their good relationship to oblige and pressure him to provide the good work results. Curiously, the interviewee insists that despite of the mentioned pressure, there is trust between employees and their superiors:

> **(FD1):** "Los jefes son bastante cercanos, pero si suelen marcar cierta distancia en temas de trabajo. Por ejemplo, mi jefe es mi amigo desde hace muchos años, pero a amistad no implica que no sea bastante exigente conmigo. De hecho algunas veces es peor, porque debido a esa amistad me siento obligado a darle resultados para no afectarlo. … de manera general hay confianza entre nosotros y con los jefes".

The next two testimonies endorse plainly the existence of good and close relationship between mid-level and upper-level employees. The first interviewee says that her superior is worthy of trust; that he listens her, and that she feels freely to express her doubts and ideas:

> **(Fd6):** "Si, mi jefe me tiene mucho en cuenta. Bueno, mi y otros 3 que somos que llevamos personal, nos tiene bastante en cuenta y confianza. Y tengo surte, es de escuchar y si tiene dudas y te pregunta - vosotros como enfocarías este tema o...".

The second interviewee, who sustain the equal/reciprocal trust to his boss, affirm that is one of the most important things that he values; the fact that he can freely exchange his opinions with his superior without the fear of possible repercussions:

> **(Fd7):** "Yo creo que si. Esa es una de las cosas que valoro, es el poder hablar con tu jefe o jefa tranquilamente de cualquier cosa relacionada con el trabajo y proponer alternativa, visiones distintas, y discutirlas con la tranquilidad".

Unlike the previous two testimonies which supported the thesis that there can be complicity between employees and their superiors, the next one puts it in doubt. He believe that although there is good relationship with his superior, he emphasis the he does not feel sufficiently close to his boss to freely show discordance/discrepancy with him. And he believes the other employees feel the same:

> **(FD5):** "Unida, unida no sé, pero tenemos una relación suficientemente buena para el trabajo. Decir que estamos unidos me parece demasiado, porque siempre hay diferencias de opinión, pienso que sucede en todo grupo. Sí que tengo contacto con otros departamentos, es necesario, de lo contrario no podría hacer mi trabajo".

In order to verify whether there is a distinction in perception of interpersonal relationships between employees in general, and interpersonal relationships between superiors and their subordinates, it was decided to make the

corresponding questions separately, and depending on outcome, analyse it indistinctively or separately. Finally, it was decided to proceed with the separate analysis, as there were observed sufficient evidence that pointed out to its necessity. It is observed that there are two blocks: in the first block, there are high and mid-level employees, on the second, lower-level employees. The employees of the first block have tendency to understand more easily between themselves, while the employees of the second block seem to feel/have certain distance with their superiors. One of the employees of the second block mentions that too much trust in the superiors can be counterproductive, as there can lead to abuse and overexploitation. The data obtained form the interviews affirm that there is an invisible barrier that mark the territory of those who are in charge, and those who follow, and that everyone involved is conscious of that.

Camaraderia/ friendship

Depending upon the job position, it can be more or less complicated to have close relationship with co-workers. For that reason, the interviewed executive of the corporative company insists in separation of private and professional domains. She admits that, after 28 years of working in the company, she arrived to consider some of her employees as friends. However, she believes that it is necessary to establish certain line, so that there is no confusion or abuse:

> **(Fc1):** "Es buena, nos llevamos bien, convivimos bien e intentamos no mezclar la amistad con el trabajo, intentamos alcanzar los objetivos. … evidentemente cuando llevas 28 años trabajando en el mismo sitio estableces vínculos personales, porque es lógico y no sería normal si no fuera así. Depende del puesto que ocupes es más complicado a veces, intentas distanciarte un poco para que no se confundan las cosas, pues evidentemente sí que hay gente con la cual aparte de compartir el trabajo quedas de tomarte una coca-cola o ir al cine o alguna cosa. No con todos, pero si hay gente con la que quedas, sería raro que no fuera así".

The same interviewee shares her observation regarding the friendship at work place. She claims that good personal relationship or friendship does not enhance/ influence positively the quality of work. On the contrary, the

interviewee affirms that if there is any influence of friendship on work, it is that it makes it more difficult:

> **(Fc1):** "El compromiso existe igualmente en todos sentidos porque además hay con algunas personas una relación muy particular por momentos vividos o por relación que has tenido. En general no creo que por el hecho de ser amigos se trabaje mejor, yo creo que a veces lo dificulta. En general he intentado conseguir una separación del tema y creo que de momento me ha salido bastante bien. De momento no hay conflicto entre los que son amigos, el trabajo y los que no son tan amigos hay una buena relación de trabajo".

The next testimony about friendship at work is a little bit confused. The interviewee begins the explanation saying that she does not have friends at work place, and in the continuation says she goes out with some of her colleagues after work. She furthermore describes usefulness of this type of relations influence on the work. She says that this bonding out of work enhance working environment, creating the atmosphere of trust, in which one can freely comment issues, as well as it permits more efficient executing of work:

> **(Fc2):** "… si, mi grupo de amistades no es del trabajo, pero sí que tengo una buena relación con algunos, con 3 o 4 me quedo después del trabajo no sé, para una cerveza. … si mucho, muchas veces es necesario, y salir de aquí y hablar de otras cosas que no sean del trabajo, agiliza en trabajo, el ambiente es mucho mejor, te da más seguridad para comentar ciertas cosas, te da más tranquilidad en el caso de algún error poder admitirlo y buscar ayuda, te da más confianza".

The next employee has a similar posture as the previous. Being a new employee in the company, she claims no has friends at work. Besides, although she believes that friendship may bring some benefits, she is aware that there exist personal interests which create ambiance of pressure and competitively as well:

> **(Fd8):** "Amigos no lo diría, más bien somos colegas de trabajo y como tal nos relacionamos. Es muy complicado mantener una

> amistad dentro del trabajo puesto que quieras o no hay mucha competencia y presión. Cada uno tiene sus intereses y lucha por ellos, además del hecho de que soy bastante nueva en esta empresa. …, de alguna manera todos sabemos que una buena relación con los compañeros de trabajo nos ayuda más que una mala relación. Es como todo en la vida".

While the interviewee FD8 perceives that the fact of having friends as colleagues can make additional pressure at work, the interviewee Fd7 feels it is quit the opposite. When she experience pressure, coming from inside or outside, she is counting on the help of her colleagues:

> **(Fd7):** "… la presión puede venir de interno como del externo… intentas a digerir como puedas, con la ayuda de los compañeros y echándole horas".

The next interviewee seems to have very good friends among some his co-workers. As he says, they spend lot of time together; they usually have lunch together at the office, and meet often after work. As we understood, these close relationships of friendship were developed staring from the good interpersonal relationship between colleagues at work place:

> **(Fd1):** "Si, tengo amigos dentro, varios y solemos salir a comer al menos 2 veces por semana. La mayor parte de los días comemos en la oficina y siempre convivimos. Evidentemente no todos son mis amigos, pero son buenos colegas de trabajo. Es también común que en algunas ocasiones salgamos a tomar algunas copas".

Good interpersonal relationships between employees sometime grow up in real friendships. But, in majority of the cases, there are some limits of that friendship when in come to work. These limits serve as a prevention of possible confusions, pressures, rivalry or even abuse. Other, more positive outcome of relations friends- fellow colleagues is a special bonding that may facilitate work to be done more efficiently or even influence positively creative processes. The trust which is one of the key features of friendship may influence the working

climate positively, encouraging freely and openly discussions on the work topics.

Teamwork/collaboracion

Depending upon the work type, a teamwork or collaboration may be considered crucial. In majority of works, that is the case. The companies tend to copy a real life, and a in a real life, we are individuals that are interconnected with other individuals. The following testimonies confirm this thesis.

The next interviewee talks about synergies between employees in her company. She emphasises that has to do with the fact that the company is cooperative type, which is known to promote collaboration. The interviewee says that the company has a strong social component that unites them in the pursuit of the common goal:

> **(Fc1):** "Somos una Cooperativa, se trata de estable de sinergias absolutamente con todo el mundo, empresas del mismo sector, otras cooperativas, en el fondo tal y como está la sociedad, la gente no se da cuenta; la unión hace la fuerza y todos perseguimos un objetivo común, pues es mucho más fácil que si tú vas solo, sobre todo cuando estamos hablando de temas sociales, en los cuales tienes que actuar como grupo para conseguir una mejora".

The same interviewee sees the collaboration as a process of helping out a colleague who has difficulty with his or her part of the work, even if means working twice as hard. The most important, claims the interviewee, is to achieved the planed objectives:

> **(Fc1):** "… pero es verdad que al final actuamos como cualquier equipo; cuando alguien no llega tiene el de a lado que trabaje el doble para suplir al que no llega: aquí está el cooperativismo, es decir si tú no llegas porque te encuentras mal, tu compañero tiene que suplir un poco las mal causas que tú tienes de momento y lograr tu objetivo final".

The same interviewee furthermore affirms that there is no rivalry between the employees in her company. She justifies it by the fact that they work with the disabled persons one side, and on the other, that the company does not pursuit the pure profit like other type of the companies:

> **(Fc1):** "No hay competitividad más que nada colaboración entre compañeros, al final nuestra meta es conseguir trabajo para personas con discapacidad y llegar al fin de año no con grandes ganancias pero sí sin perdidas. Entonces no hay una gran competitividad entre nosotros, sino que entre todos intentamos complementarnos y trabajar donde haga falta".

And this interviewee repeats the similar story as the previous. The company has a social component which encourages closer collaboration between employees, and all interviewee's actions go in that direction:

> **(Fc2):** "… como si faltas hoy haces que tu compañero se retrase si yo veo un problema con un chico veo con el equipo de trabajo social para ver cómo solucionarlo me echan una mano y en seguida se involucran en las necesidades de los demás si todo es cooperativo".

The next interviewee claims that is fully independent in her work, although it does not apply in taking any decisions, in which case she addresses to certain person(s), usually by email or phone.

> **(Fc3):** "Si, es un equipo, siempre necesitas algún tipo de ayuda, autónoma cien por cien no, a ver yo cualquier decisión que yo tenga que tomar que se salga tengo que consultarlo, se consulta, que se consulta, prácticamente todo, por teléfono o por correo".

Like a previous interviewee, this one says is autonomous in her work. she, being an executive, need to collaborate with others, because her work is to organise their work and manage different teams work. Besides, the interviewee explains that she has to share information with her subordinates and give them support in case it is needed:

> **(Fd1):** “Bueno, digamos que gran parte de mi trabajo puedo hacerlo yo sola, me refiero al tema más administrativo, papeleo, procedimientos administrativos, indicadores, etc. Sin embargo una parte muy importante de mi trabajo es trabajo en equipo. Yo debo coordinar a varias personas y por lo tanto debo gestionar al equipo correctamente. También el hecho de compartir información y apoyar a mis compañeros me ayuda a mí porque siempre vamos todos aprendiendo algo”.

In this case, the interviewee says that there is an initiative to enhance the collaboration between employees and promote teamwork in order to improve efficiency. It implies that there are some issues related to the topic in the interviewee’s company:

> **(Fd7):** “Lo que estamos intentando en los últimos años es mejorar lo que está el trabajo en el equipo y las dependencias entre unos y otros, poder gestionarles más eficiente. Y eso se nota”.

Similarly to the previous testimony, the next interviewee confirm the existence of a project that aims to bring more closer collaboration, but that she admits she does not feel that spirit of the team, and believes that everyone has its proper agenda to/that pursuits. She furthermore claims that as there is no spirit of team, it does not mean that they do not collaborate. Her co-workers collaborate only because it is necessary to bring work done:

> **(Fd8):** “Bueno, digamos que intentamos trabajar lo mejor que podemos como equipo y eso ya es bastante. Yo no diría que me siento unida porque en realidad no siento que haya un verdadero espíritu de equipo, cada uno va a su bola y a sus objetivos, me parece que la gente coopera no por el espíritu de equipo sino porque sabe que necesita cooperar en para hacer mejor su trabajo”.

The next interviewee admits that he works exclusively under the supervision. As the interviewee explains, he works with computer, and the process of supervision includes basically revision of files. The interviewee says that not only his superiors supervise his work, but the superiors of other department have access to it. And, it is not unusual that he receives phone call from them to

consult, ask him something or to give further orders. The interviewee affirms that he know well his job, what contributed that his chief gives his a lot of space:

> **(Fd5):** “Realmente bajo supervisión. Tenemos al jefe y tenemos las herramientas informáticas que de alguna manera van reflejando nuestro avance y todo lo que vamos haciendo. Tanto los jefes como otros departamentos pueden ver como evolucionan por ejemplo las ventas, como se mueven los inventarios. Y en muchas ocasiones también te llaman para preguntar algo, sugieren cosas o dan órdenes. Con lo cual yo diría que es bajo supervisión. También es verdad que a estas alturas conozco muy bien mi trabajo y prácticamente mi jefe me da muchísima libertad de acción. Yo diría que una mezcla de las dos”.

In addition, the interviewee claims that there is not actually a will from part of superiors to promote teamwork. As the interviewee describes it, the teamwork is a necessity as it is impossible to work otherwise. That is why reunions are so important because during the reunions there is process of collaboration, sometimes more, sometimes less, says the interviewee. He, however, claims that during the mentioned session of work meetings, there are not sharing experiences, knowledge or problem solving:

> **(Fd5):** “No se si decir que se promueven, porque no es que la empresa haga promoción o insista en ello, más bien se hacen y punto. Nunca he escuchado a un jefe promover reuniones o trabajo en equipo. Pero las reuniones se hacen y se intenta trabajar en equipo. Pero más bien porque es imposible trabajar si no nos reunimos algunas veces. Algunas reuniones son muy útiles, otras no tanto. Eso de compartir experiencia, conocimientos y resolver problemas no lo tengo tan claro. Más bien creo que las reuniones se hacen por motivos de organizarnos para lograr los resultados del día a día”.

From the obtained data, it can be resumed that teamwork is largely accepted by the interviewed employees, although it was interpreted very differently. The interviewees from the cooperative company emphasised social component and the importance of collaboration, as well as helping a fellow colleagues as something that is understood and traditionally related to this type of business. The employees of the other company feel that the company is not that

interested how the work is done, if that was a team effort or not, although there were some initiative to promote collaboration. The objective of the last is the final result and profit, and if it means that teamwork will bring better results, then it is worth of implementing it. It does not, however, make the employees feel the team spirit.

Reconociemiento de trabajo bien hecho

In this part are presented three different postures in reference to acknowledgment for good work of employees. The three different opinions about whether and how the good work results should be acknowledged are coming from the upper-level, mid-level and lower-level workers. In addition to the mentioned testimonies, one interviewee reveals which is the usual way to be ascended in the company that she works.

The first position comes from one executive. She defends the thesis that there is not necessity of acknowledgment for good work results. She thinks that her employees, by accepting the work contract, assume that they should do their job and, that as a counterpart, they receive the salary. Furthermore, she claims that the employees know when they are doing well their work and that they do not need any especial recognition for it. The interviewee also mentions the trajectory of ideas and proposals coming from the employees and which are considered potentially good ones. She says that there are specific structures in the company which determine who is in charge to present those ideas. In theory, the person who exposes the idea should say who is the actual author of the idea and who should receive the tributes:

> **(Fc1):** “Yo pienso que no hay que felicitar a la gente por hacer el trabajo bien hecho, porque para eso estás contratado. Cuando alguien suma tiene el reconocimiento de las cosas. Creo que no hay que darle una palmadita a la gente, la gente cuando trabaja bien ya lo sabe, lo que pasa es que quiere que se le reconozca y se le valore. Es decir si tú tienes una idea que es buena, yo no tengo por qué apropiármela, es tu idea, aunque la explique yo, porque por situaciones a mí me corresponde, hacer referencia a que es de esta persona, de manera que todo el mundo quede reconocido e identificado en todo lo que es la estructura”.

The second posture corresponds to mid-level employee. She says that the company policy only recognize and acknowledge the results of teamwork. The individual results are not costumed to be valued. It is understood that a cooperative company usually insists in team effort and teamwork, but the reality is that level of implication may differ from employee to employee, as well as their personal contribution to the final outcome. We wonder, is this policy is really fair to all employees:

> **(Fc2):** "Si, a veces se agradece pero no es lo más habitual, el reconocimiento individual no es lo más habitual, la recompensa individual, el reconocimiento individual no es lo más habitual aquí, es más el trabajo en equipo, que si que se valora. Pero el reconocimiento individual, si de vez en cuando es más el trabajo en equipo".

The lower-level employee says totally different store. He claims that the bosses, and the company en general, are not interested in how the work is done, but rather that it is done no matter how. The system of evaluation of work, the interviewee describes as subjective. It bases on productivity and results, but very influenced by personal impression of the superiors. The proposals and effort that contribute to improvement of work that surge in stratum of lower-level employees are not acknowledged nor rewarded:

> **(Fd5):** "No del todo, porque finalmente uno siempre hace cosas de las cuales los jefes ni siquiera se enteran. La empresa tiene un sistema de evaluación bastante cuadrado, esta basado en productividad y resultados y la opinión mas subjetiva del jefe cuenta, pero no tanto. Este sistema ayuda a evitar ser mal evaluado por los jefes de manera subjetiva, pero por lo mismo no toma en cuenta otros factores subjetivos que son positivos. … No se premian, yo diría que se intenta tomarlas en cuenta, pero de premiar nada. Se asume que las buenas ideas son parte de nuestro trabajo y que nos pagan por ellas".

The fact that the experience, skills and the hard work are not the primordial conditions for professional promotion is not well perceived by the employees. In

the next testimony is explained what is the most important factor for one to be promoted. As the interviewee affirms it, there are two types of promotions: first, that corresponds to promotions up-to-certain level, and the second, promotions to really high level positions. In the first case, features like experience and skill play important role, while in the second, they are irrelevant. What counts in the second case is to have a friend or a godfather who will back the candidature. The second case represents a clear case of nepotism, and therefore, although it is commonly assumed/accepted by all employees, it is not well perceived or considered fair play:

> **(Fd6):** "Bueno, cuando entras, a lo mejor es más titulo que experiencia, pero cuando estas dentro, se valora bastante la experiencia. En la hora de valorar para subir, se valora más la experiencia. Hay gente que lleva muchos años. Y luego, aunque uno tiene titulo pero no sabe, según el ámbito, pues... y subir al nivel más alto, por amiguismo. Hay mucho amiguismo. ¿Y si uno no forma parte de este circulo? - No sube. Esto es a parte de cierto nivel. A la cúpula va por el amiguismo. Luego, la parte de abajo hay mucha promoción interna".

The acknowledgment for the work well done is something that seems does not happen frequently. At least, not in the companies that participated in this study. As mentioned earlier, there are three postures in reference to this topic: first, from the top level employees, which consider it unnecessary; second, from the mid-level employees that believe only in team effort, and therefore recognize only team results (of course, they themselves are part of the team); and third, the lower-level employees who seem to be dissatisfied with the absence of public or otherwise acknowledgments of their good work. It is clearly observed the completely confronted/opposed opinion between on one side high and mid-level employees, and lower-level employees in respect whether and how the good work results should be rewarded. However, it is less clear from where come this attitude of lack of acknowledgement: is it question of organisational culture or it is a local culture that back up this position.

In the section of social capital, it was observed a clear differentiation between the management of the cooperative type of company, and the classic one. While the first one has a prominent social character, the second one is guided directly by the economic goals (profits). The analysis demonstrates that an equilibrated mix of formal and informal working climate at work contributes to a good working environment and

has a positive influence to work satisfaction. This pleasant working atmosphere is occasionally interrupted by punctual accumulation of work that triggers stress at the employees, which the more experienced workers learnt how to control. One of the interviewee highlights, what she calls ´healthy stress´, which she considers a motivational trigger. The variable trust demonstrates that there is a difference in perception, on one side by top and mid-level employees, and on the other, by lower level employees. The reason of this disequilibrium might be in the unequal distribution of power. Interpersonal relationships are also influenced by the unequal distribution of power between the employees, although in many cases, interviewees qualified them as good. The separation between private and professional domains is the most common strategy of the employees, which serves as a shield from the possible misunderstandings and abuses. For the cooperative company, teamwork and collaboration are embedded in their manner of work, while in the other type of the company are working hard in order to implement it and convert it into a general practice. The non-existing acknowledgement for the job well done form part of organisational culture, in which bosses and superior affirm is covered by employees´ work contract and the salaries they receive. This posture is not shared by the rest of the employees, which feel underestimated by the first ones.

Social capital CCL: The companies behave like societies. The first take the local culture and mentality features and modify them so that they fit according its needs. It is also true that the employees influence the organisational culture of the companies. The influence is mutual and flow in both directions. The social component is very important for the functioning of one company. Through the net of social contacts one arrived to be hired or promoted. Or else, close contact with the fellow colleagues will permit more fluid communication and collaboration. In time of excessive work, the colleagues are there to help out, as well as there is doubt how to proceed with some task. Social component shape the work environment, creating pleasant working climate that help reducing stress in time of excessive work or tensions of other type. Making social ties within the company allow the transfer of work experience and knowledge from the senior employees to younger employees. Although much of the information can be save in some form, there are certain details that cannot be described by words, and therefore saved in companies´ files. That is why it is so important to nourish the spirit of collaboration and promote transmitting the work experience, especially of those employees who soon are be retired.

Knowledge

This section includes the analysis of the following variables: initial training or coaching provided by the companies for the novices; cyclical updating and special courses for the improvement of work skills that enable correct handling of the equipment, as well as procedures necessaries for the work, manipulation of data and storage of company's information in corresponding databases which companies use for auditing, planning, developing strategies, searching problem solutions and for many other activities; reunions which are still a very popular method for sharing the information or discuss the important matters, and training support which referees to knowledge transfer from the senior to junior employees.

Aprendizaje/cursos iniciales

It is common that when the new employee enter in one company, he or she receive some kind of training or has some sort of introduction in what will be his or her work. Some companies prefer classical learning process which includes a senior employee who is training a novice. Working side by side, a new employee acquires a notion of the work. Other companies provide special introduction courses for the new employees. And, sometimes, companies only distribute written material to the new employees, in which are explained the missions and visions of the company, and in what consists their work.

In the next case, the interviewee describes her first steps in the company. She says that as a apprentice, she was delegated to one senior employee who taught/trained her for her future work. She recognise that the senior employee help her a lot at the beginning. After one year of working in the company, the interviewee received a first formal course:

> **(Fc2):** "… si, al inicio no, fue mucha parte de una compañera, que estaba día a día conmigo y ha pasado con el mismo puesto que el mío y si me ayudó mucho, todo fue con el tiempo pero si tuve la primera formación en febrero del año siguiente y sobre el funcionamiento interno de lo que es el sic que es la forma de como tener que hacer los documentos, que sean de forma arreglada, si tengo que hacer informe que sea con este documento, luego tuve formación de cooperativas pero eso fue al año siguiente".

The same interviewee explains how she felt when she started to work independently (without assistance of her coach). As she admits, she felt overwhelm and lost because she actually did know much about the work she supposed to do. She says was additionally stressed as well because she did not know the staff and it was her job to organise their work:

> **(Fc2):** "Recuerdo estar muy perdido… Yo no tenía ni idea del trabajo, y es un trabajo del día a día, que de momento a otro tienes que hacer un cambio y buscar a otra persona y de la suplencia y todo me suponía un poco de estrés al principio porque no conocía a las personas, pero al principio recuerdo un poco de caos…".

This employee remembers the time when his company did not have computers. The work was done differently. He says when he came to company, he work with the senior employee who coached him until he learnt the job. In his opinion, it was all easier before, even if there were no initial, formal trainings, as there are today. With introduction of technology in the company, the way of working changed. He admits that now, the use of technology is imperative, and for that reason it is necessary to learn/acquire new skills, or in his case, computer skills:

> **(Fd5):** "Sinceramente no recuerdo ningún curso, también es verdad que empecé a trabajar en esta empresa hace muchos años y en ese tiempo no se hacían las cosas como ahora. Ahora se tiene mucho más tecnología y si no te enseñan a usarla vas perdida. Anteriormente no teníamos tanta tecnología y era suficiente con que tus compañeros o tu encargado te enseñaran lo que tenías que hacer. Yo empecé desde abajo y lo que hacía era muy sencillo, así que fui aprendiendo con el día a día, después, en los últimos años sí que me han capacitado un poco".

The interviewed employee indicates the insufficiency of the initial courses which should give the new employees all basic information necessary for his or her work. Thus, the interviewee admits to be disappointed and neglected by the superiors, who suppose are there to back them up. He, furthermore, criticizes the bosses affirming that they are only directed by the results. No wonder that the interviewee's main preoccupation is not to make any mistake that could cost him greatly. Nevertheless, the interviewee says that when he need some advice, he turn to his co-workers and, curiously, to his superiors:

> **(Fd8):** "Sinceramente no, estoy un poco decepcionada, ya que el curso de inicio no ha sido muy bueno y estoy un poco a la deriva, debo ir preguntando a compañeros y jefes, revisando varias veces los temas y buscando información por donde puedo. Todos quieren resultados y como lo hagas me da la impresión que ya es tu problema. Algunos jefes se preocupan un poco más, pero como el trabajo los supera, imagino que dan prioridades y nosotros (al menos yo y mi capacitación) no somos una prioridad. De momento no he cometido errores graves afortunadamente, ya veremos qué pasa si los hay, no me sorprendería como se lleva todo".

All companies have, at least theoretically, a procedure that includes the initial training for the new employees. Some of them have more official character; others are more informal and take a form of learning along the way. In the interviewee's opinion, the initial trainings are scarce, poor quality, insufficient, too short, and generally do not prepare the novice for his or her future work tasks. As a consequence, surge the sentiment of impotence and disappointment, and even a stress, as the new employee experiences during the first period in the company. A little bit less dramatic situation is when the novice has a delegated senior employee who serves as a role model. The apprentice is observing a master and copies his movements; this practice also does not guarantee that the apprentice will achieve the necessary skills in the determined period, and that is the reason why it was qualified negatively by the interviewees. What is noticed in this part is that there is not enough resources dedicated to the initial courses of the new employees, and that companies, for some reason neglect this issues, or simply are not aware of that important insufficiency.

Information storage

There is a tendency in organizations to storage all available information and data. For that purpose, they need adequate computer equipment and databases on one hand; and on the other hand, instructed employees who know how to use them and follow the corresponding procedures. Although the majority of employees are handling company's information, it does not mean that they have access to all information stored in company´s databases. In order to manage that access to data, workers might be required a special clearance, due to confidentially of the certain data.

The interviewee explains that her company insists in saving all the information in the system. She says the there is also all information in hard copy format. She admits that the stores information is useful, especially when there is a question of teamwork; everyone can consult reports save in database. In this way, the interviewee points out, the information is well arranged and easy to find when it is needed:

> **(Fc2):** "Se intenta guardar todo en el sistema, eso es desde la parte social, hay un poco de todo Se guarda toda la información en papel e informáticamente, tenemos copias de seguridad en lo cual se guarda todo lo que va pasando pero todo en el sistema y en papel. … Yo las navidades las pase un poco más tranquilas, el curso estuvo bien, si ya sabía hacer estos informes, pero en general ya sabía casi todo, y a lo mejor no le daba la importancia de un protocolo, y entonces me di cuenta de que hay que seguir unos pasos, siempre igual porque el trabajo en equipo es lo que tienes, si alguien viene a buscar uno de mis informes sabemos que está hecho con ese tipo de formato. … Algo que me gusto al principio fue que si yo preguntaba algo, me daban toda la información de que habían hecho ellas y buscar algo que me ayudara estaba ahí".

The next interviewee talks about the information storage in her company. She says that the main information is in emails, although the company has a system, which in theory, gathers all the information, but seems it is not that much used by the employees. The interviewee implies that not all information is saved or stored properly in the existing system, and therefore it is cannot be shared. He also wonders whether the company has access to it and can exploit it:

> **(Fd8):** “Información se genera mucha y cada día, sin ir más lejos yo debo recibir mismamente 100 correos electrónicos por día, imagino que el resto de mis compañeros, jefes, etc. también recibirán muchos, esa información esta en los correos, imagino que la empresa la puede guardar o la guarda. Otro tipo de información no lo se. El sistema que utilizamos tiene también mucha información que la empresa guardará. Claro que todos tenemos información en nuestros ordenadores y esa no creo que se comparta y no se si la empresa tiene acceso a ella”.

In the following testimony, it was found the similar issue as in the previous. There are some information which are not saved, but in this case it is due to absence of clear protocol which require storage of all the information. The interviewee says that in that way a lot of information is lost, and exemplifies it by the retirement of one employee and replacement with the new one who had to continue the same work. Clearly, says the interviewee, the situation was complicated as the new employee did not have all the information, and it was difficult because no one knew exactly how the retired employee managed the work:

> **(Fd5):** “Yo creo que muchas cosas están ya guardadas en las herramientas informáticas que utilizamos y en los correos, claro hay cosas que no se guardan porque no hay quién se interese por hacerlo. Muchas cosas se dan por hecho y no se guardan porque nadie se da cuenta de su utilidad y luego vienen las consecuencias. Muchas veces los jefes no ven cosas que pasan abajo y que son importantes. Hace 4 meses cambiaron a una chica de mi equipo, el jefe dijo que la nueva chica sabía hacer el trabajo porque ya lo había hecho en otra empresa similar y que todo funcionaría igual. Pero claro, la nueva no sabía muchos detalles que la antigua hacia y que no están escritos en ninguna parte y por supuesto los jefes ni idea”.

It is observed that the companies insist in saving all the possible information at their databases. Some of them have a hard copies as well, but as it requires more resources (see paper and files, also adequate space to store those papers and files), there is a tendency to disappear this form of storing the information. When it comes to electronically stored information, this one is characterised by easier and faster access. The employees consider it useful, especially for teamwork, as sharing the information between employees is

instantaneous. The tool which is frequently used for saving the information, besides the company's databases, is email. It seems that the trend of saving and storing every available information in the company is justified, as the same information serves for a variety of the company's activity; from supervision of work to developing company's strategies. But, there are evidence that not always all the information is saved. It happens for different reasons, such as lack of time or, in the case of a temporary hired staff who even might not have a access to database and therefore cannot consult it nor enter any new information. It not unusual that when a senior employee retires, a lot of information or better said knowledge, get lost. And that is the actual value of one company that vanishes forever.

Ongoing/permanent learning/cursos

Today, continuous updating and refreshing of knowledge and/or skills is almost considered as a must, as it can be observed in the following testimonies, where the employees of the different level describe their own experiences. Some of them, who enjoy privilege of high level employees, seem to have access to better quality of courses, while the rest have to conform with less.

This interviewee is an executive in her company. She is the person who has a global picture about how the company function, which are company's necessities, and other issues, such as, for example up-dating of the employees. The interviewee explains how the annual scheduling of courses is elaborated; there is a special team who evaluate the current necessities based upon the information coming from the above. Than, the propositions related to courses are accepted or refused by the special team. In the case when one course is approved, then it is decide who will attend it, followed by the process of monitoring.

> **(Fc1):** "Hay un programa de formación que se hace a principios de año, en el cual desde las diferentes direcciones de las diferentes cooperativas marcan las necesidades que ellos tienen; hay otras que se marcan directamente de la entidad como es el cooperativismo y

> demás; desde aquí se marcan los planes de formación y se hace un itinerario anular. Eso quiere decir que durante el año pueden surgir diferentes temas de formación pues estamos suscritos a diferentes temas de formación que pueden ser interesantes y que no estaban previstos, en todo caso tenemos un sistema integral de gestión en el cual diferentes direcciones o coordinadores de grupos hacen la petición que considere necesarias para su grupo o para la entidad, y luego se aprueba, o no, y entonces se gestiona todo lo que sería: apunte de personas al curso, el seguimiento a todas las formaciones, encuesta al alumno, encuesta al profesorado, se checan asistencias, aprovechamiento, hay un seguimiento importante al tema de formación. Depende del puesto de trabajo que asuma, hay puestos de trabajo que es más sencillo y otro más complicado y que si necesita más seguimiento".

In addition, the same interviewee affirms that she considers that she is fully capacitated for the position she occupies. However, she admits that it is necessary to continuous updating and perfectionism as the sector in which she works is permanent change:

> **(Fc1):** "Creo que si estoy capacitada para el trabajo que estoy haciendo, evidentemente siempre hay que mejorar y formarse, y aprender más cosas porque si no, te quedas estancado y el mundo evoluciona y el sector evoluciona. Yo creo que la formación continua es imprescindible porque los términos que ahora se utilizan no son los de hace 15 años, ni serán los de dentro de 35 años. Es importante la educación continuada para ver cómo evoluciona el sector".

The next interviewee explains that there are two types of professional updating: one which is organised outside of the company and the other provided by the company. The first one, being unofficial, are not covered economically by the company, meaning that the employee pays the tuition. However, the company collaborates in the way that allows flexible work hours to the employee who attends courses. The second type of courses are those provided by the company. As they are organized by the company, their fee is covered by the company. The interviewee describes one of those courses she attended, and qualifies it poorly:

> **(Fd5):** “Que yo sepa cursos la empresa no paga a los trabajadores cursos externos, vaya que yo sepa, igual a otros niveles si lo hacen. Lo que si nos permiten hacer los jefes es ser flexibles con los chicos o chicas que estudian, no se les apoya económicamente ni nada de eso, pero si se les da cierta flexibilidad en horario. El último curso como tal que recuerdo fue hace unos años para aprender a manejar el sistema de control de ventas, inventarios, etc. Fue un curso bastante corto, un par de horas y nos enseñaron lo básico, a partir de ahí cada uno fue aprendiendo a base de preguntar a los compañeros, jefes, etc.”.

And the interviewee detailed why she evaluated negatively the last curse she attended. She says it was too short, the presented information was completely new for her so she could not process it that fast. The interviewee admits that after completing the course, she actually stared to learn using the method of test and error, with help of her colleagues. Overall, she claims it was very difficult for her to implement the new information. She thinks that if the mentioned course has had been better and more exhaustive, that she might learnt it easier and faster:

> **(Fd5):** ¿la última formación? “Fue una formación demasiado corta para mi gusto, recuerdo que la sensación que me quedo fue de preocupación porque era todo nuevo para mí y fue demasiada información en tan poco tiempo. Después con el tiempo fui aprendiendo a prueba y error y con la ayuda de los compañeros, pero me costó. Quizá si hubiese sido una formación más completa me habría costado menos aprender”.

The next interviewee repeats the similar story. She feels disappointed by the quality of the training she received. First, she says, the person who was in charge to coach her was too busy with another project, so he did not have time dedicate to teaching her. She confesses she was obliged to move closer to the mentor’s desk and to consult him when ever he had a spared moment. In her opinion, it was not a very pleasant experience because, on one hand, her mentor did not have patience, and on the other hand, there were no proper conditions for the coaching develop naturally. The interviewee evaluated quit negatively this process of training, qualifying it as a chaotic:

> **(Fd8):** “Si, de hecho podríamos decir que continúo en capacitación. El primer mes me indicaron que un compañero me daría el curso pero sucedió que aquel compañero estaba en un proyecto y tenía mucho trabajo, así que me moví a su mesa y a ratos me iba explicando cosas del sistema, de cómo funciona la empresa, etc. Yo diría que no fue un curso como tal, más bien él lo iba haciendo y yo anotando en mi libreta, después el se iba y yo practicaba, si tenía dudas esperaba a que volviera y le preguntaba. Sinceramente un poco caos, porque el compañero no es muy paciente y a mí se me dificultaba. … Como te comente anteriormente, para mí fue una experiencia sinceramente negativa, por el formador, por la cantidad de trabajo, por la poca atención que se me presta, etc. No se si siempre sea así, por lo que he escuchado anteriormente no ha sido tan diferente”.

The same interviewee explains the consequences of the poor training. She admits, that due to lack of quality training, she still has problem in doing her work properly. There are too much doubts in reference how she should approach a certain tasks. Besides, she feels overwhelm by amount of work, and simply do not achieve to manage it all. Her impression is that neither the senior employees nor superiors comprehend really how certain things function. In addition, she criticizes a system that the company uses, saying it is too limited; that it that requires the correct information, but frequently the information is not correct. Finally, as a result of the mentioned processes, the system fails, and seems that no one is capable to resolve the issue:

> **(Fd8):** “Después de 8 meses veo tristemente que aún tengo muchísimas dudas, además tengo una carga de trabajo tremenda y no puedo ponerme al día. Me da la impresión de que hay muchas cosas de los sistemas que ni la misma gente que lleva muchos años trabajando aquí las tiene tan claras, al menos a mí no me las han explicado. También veo que el sistema es muy cuadrado y requiere que la información que se le introduce sea muy buena, y eso no esta pasando, por eso muchas veces falla y no podemos trabajar bien. Me da la impresión de que los jefes tampoco son capaces de solucionar esto y entonces es más fácil trabajar con lo que hay, aunque no esté todo bien”.

This employee points out that he lack the training. He considers that her knowledge about how functions one cooperative business are insufficient, as well as a topics related to working with disabled persons:

> **(Fc2):** “Creo que me falta una formación, una que otra formación en temas de cooperativa y en tema de discapacidad también, me gustaría reforzar sí”.

The next two testimonies come from two employees who work together. They claim that there is too much work which unable classic training. They work with certain, specific products that, by their own words, they do not have sufficient knowledge. The first interviewee admits she was picking up the information with time:

> **(Fc4):** “No hemos tenido tiempo de platicar para conocer el producto, solo es escucharlo; tarde algún tiempo en conocerlos porque yo nunca había conocido estos productos, son productos artesanos que en otro lado no conoces. Si, hasta que conocí todo me costó. A mí no me gusta el vino, me costó mucho aprender sobre la marcha. Ahora sí ya sé, todo eso lo he ido aprendiendo con el jefe”.

The second interviewee mentions a brochures with the information about the products they sell, but says the information is not sufficient, and implies that some kind of training would be more appropriate:

> **(Fc3):** “Vienen a la tienda, no vamos a un sitio para que nos hagan una formación no, si la casa proporciona un folleto para leer algún producto, si claro, si nos enseñaron, si, a ver es muy básico, pero sí que te enseñan claro, no te dejan y venga”.

The next interviewee has access to some courses. As she admits, some of those were not precisely related to her area of work, but generally, were useful. She qualifies them positively and seems to be satisfied with the trainings:

> **(Fd6):** “yo hice uno como enfocar tu trabajo, como organizar tu método de trabajo, luego ponerte relajado durante el día y estuvo bien. Havia de cursos de todo, .. de competencia , como hacer mejor las presentaciones, pero yo fui uno de estos y estaba bien…”.

Not all employees consider they need special training or courses. The next interviewee believes that there is sufficient information out there, for example in the form of specialized journals. He also mentions the knowledge of senior employees as a potentially reach source of information that can be exploited. Nevertheless, he says he attended some courses, but it seems that he prefers other type of learning:

> **(Fd7):** "Al nivel de cursos, intento las revistas temáticas o... pero no es formación pura y dura. Pero bueno, he hecho cursos y ahora mismo básicamente la prensa especializadas en tecnologías o por los compañeros de la oficina. Que están tocando un tema que tu no conoces y bueno te interesas".

In all companies, there are two groups, those who take decisions, and those who follow those decisions. In what considers the analysis of the ongoing process of learning, the first are those who analyse and select by their own criteria which courses are the most suitable for their employees, taking into account different work position they occupy, and the necessity they need to cover. The second group may make suggestions in reference to specific courses to cover skill necessities, but even if they are justified, it does not mean that the courses will be addressed. For that reason, the second group is sometimes forced to attend external courses which they finance themselves, unlike the official courses which are usually (but not always) paid by the company. The majority of the interviewed employees who attended the courses provided by their companies, evaluate them negatively, emphasising their extremely limited time for presenting a great amount of new information. Due to insufficient training and courses, employees admit not being able to do their work properly. On the other hand, some employees claim they are overwhelmed with the work, and this situation does not help the process of learning, as they do not have time to dedicate to it. If the learning and acquiring new skills is seen as complementary part of the work, why it is not properly planned and incorporated in everyday tasks? The response to this question is in the hand on every professional manager who has to power and means to correct the mentioned anomaly that his employees are pointing out.

Meetings

The major problem of the work meetings is that they do not serve to resolve problems, claims the next interviewee. She says that there too much meetings, but they have merely informative character. Like a teacher in the major class who exposes the information and the pupils listen, the same the bosses expose what they consider relevant, and in occasion, listen some problems that employees meet in everyday work, but they are not that keen to work in their solution.

> **(Fd8):** "Tenemos reuniones, pero son más bien informativas, ya sean con los jefes o con gente de otras empresas, nos reunimos para comentar algunos temas pero no para resolver problemas, los problemas realmente los resolvemos nosotros mismos. En las reuniones con los jefes ellos nos informan y en ocasiones escuchan a gente quejarse, pero no me parece que escuchen con el interés de aprender, solucionar problemas o tomar en cuenta las ideas de la gente, me da la impresión que lo hacen para informar y por obligación".

Often, it can be heard that work meetings do not serve for anything. These type of complaints are not unusual, and they tend to be based on past experiences of the employees. There is a variety of reasons why those experiences are negative, such as inadequate preparation for the meeting of the person who is in charge of it or the modulator, too much persons participating creating a crowd that depending on the topic is difficult to control, etc. Short daily meetings have received much better evaluation from employees, these kinds of meetings have as objective to organise the daily work of all employees and manage urgent issues. As they are time limited, they proven to be more efficient and less time consuming for the employees, who have great amount of work to do. It is not clear why the executives do not address more seriously this problematic; in order to avoid the vast of time and money for what was proven to be totally inefficient method of collaboration.

Apoyo en Aprendizaje /learning process

In this part is analysed the flow of learning process in the selected companies. It was previously explained that in many occasions the companies provide trainings and specialized courses which, by the opinion of the majority of the interviewee, were not or good enough or simply were too short for the amount of the new information. Many of interviewees found themselves in the situation that they need to do their work, but did know how; they lack the basic information necessary for the execution of their daily tasks. They admit that depended on the help of their senior, more experienced colleagues.

The next interviewee describes her process of learning in the company. She says that after attending some courses, organized by the company, she was not able to do her work. She claims that courses were too theoretical, and lacked of practical demonstrations. That is why she turned over to her fellow-colleagues to ask for help. The interviewee admits that the last were a key for acquiring a real and indispensable knowledge required for her work:

> **(Fc2):** "El apoyo del compañero. Quizá porque después de hacer este curso de prestaciones seguía teniendo dudas, y hasta que no llegue a la práctica, cogí a la compañera y cualquier cosa que necesitaba iba y le decía, ¿me puedes echar la mano?, y respondía que sí; y te ayudan a hacer la gestión del trámite. Los cursos eran muy teóricos y quizá faltaba el llevarlo a la práctica y ver los casos, porque como cada caso es individual en sus características la verdad es que dudas, y el día a día me ha hecho que con esta base de formación llegaba a hacerlo un poco más ágil y con la ayuda de los compañeros, más todavía".

The same interviewee adds further information about learning process trough which she passed trough. She explains that, as there were lots of different topics that contained a great amount of information, and that she could not aboard/attend them simultaneously, her co-workers were helping her by introducing gradually bits/portions of information that she needed in precise moment. In that way, she was slowly adopting new information, processing it, and integrating it in her work. Although the interviewee recognizes that there

was an initial exhaustion, with time and assistance of her colleagues, she overcame it:

> **(Fc2):** "Algunos temas se me agotaron, pero a medida que se me han ido explicando un poquito, pues se me han ido ampliando, pero más que nada porque yo no tocaba todos los ámbitos justo a lo que yo necesitaba y poco a poco se me han ido abriendo la información y la documentación. … si de algunos se me ha hecho curso y de algunos de explicación y apoyo por parte de algún compañero. La agenda de algunos servicios me lo explico una compañera, también un tema de contabilidad, pues la responsable de contabilidad, me explico los pasos, y siempre que necesitaba una ayuda ya estaba para explicarme. Tema más técnico social, tema de prestaciones y demás, sí que iba a un curso, que me han informado de las prestaciones que hay para las personas con discapacidad hasta donde se puede acceder y demás esto ha sido un curso después de un año, más o menos".

In the example of the next interviewee, the learning process was somewhat different to the previous. The interviewee did not attend any courses. However, she received formation which consisted in follow the senior colleague; observed how she works, ask if something is not clear, and copy that pattern of work. She admits that at the beginning it was hard because there were too many details, and everything was new, but with time, the thing came to place. Now, she sees that the company is very well organized, meaning when that when occur the situation she does not how to manage, she knows to whom she should address for assistance. In case she makes a mistake, she is not afraid to consult her superior. In that way, she says, although it is not a pleasant feeling, one can always learn something new. This interviewee points out that it is a sales director who involves personally to explain them all the details about some new product:

> **(Fc3):** "Claro yo estaba con mi otra compañera, y ella fue la que me enseño, y luego, la otra jefa que también lleva el tema de pedidos, pues es la que me ha enseñado casi todo si, se transmite claro, si, si, no para nada, para nada, bueno a ver al principio todo es un mundo, pero la verdad es sencillo está bien organizado, dudas al día de hoy tengo lo que ocurre bueno, llamas preguntas siente equivocas pues bueno aprendes, te llevas el disgusto y ya está, pero bueno".

> **(Fc3):** ¿Como aprenden sobre los productos? "folletos si el producto, la empresa que te trae algún producto y te trae folletos, pues tú te informas, pero cualquier novedad el director de tiendas es el que nos informa del todo".

Similarly to the previous, the following interviewee states she has a considerate boss who likes that his employees have all the information because in that way, clients also will be well informed about the products they sale. The interviewee claims she had a prior knowledge about computers that they use for work, but that it was her co-worker who taught her how to use the company's system:

> **(Fc4):** "Me enseñó mi compañera el sistema. Yo más o menos sé el ordenador, siempre he trabajado con pantalla por que estaba en el supermercado y era jefa de cajas, siempre estaba en la caja, entonces lo tenía mucho por la mano. … Mi jefe cada vez que viene, yo me quedo a lado de él, porque a mí me gusta escucharlo. A el le gusta explicar al cliente, yo me quedo es escuchando porque así tengo armas de venta".

This interviewee is experienced employee who has in charge a team of junior employees. She says that in many topics of the work, she is an expert. But, for example, in the case of computers she admits she is not that good. Then, she usually counts on her younger employees, who are more familiar to computers, to assist her:

> **(Fd5):** "Lo que utilizo diariamente lo domino bastante bien, pero si algo se sale de lo normal o cuando piden cosas nuevas o diferentes sufro mucho. Afortunadamente tengo a mi cargo gente más joven a la que se le da un poco mejor eso de los ordenadores y me suelo apoyar en ellos".

The new employees always pass trough the period of adaptation, as the following employee. She describes her situation of apprenticeship. She states she works under supervision of her direct superior, and other experienced workers. And, she prefers that way because, being a new at work, she does not feel assured. In the fact, she insist in revision of her work:

> **(Fd8):** “Bajo supervisión todo el tiempo, al ser nueva dependo siempre de otras personas para mi trabajo y de momento al menos mi jefe directo y la persona con la que estoy trabajando hombro a hombro para aprender revisan mi trabajo. De hecho, yo soy quien pide que lo revisen, pues no me siento muy segura aún para hacer el trabajo yo sola”.

This interviewee likes about his work the fact that his is in continuous contact with different technologies. It seems to fascinate him. However, he admits that it can be counterproductive sometimes. And he explains why he considers that in occasions, it is not good to disperse in different directions. In interviewee opinion, in that way, one can never dedicate to study and learn one domain thoroughly. There is not enough time to dedicate to it, as there is always too much work to be done. The interviewee points out a paradoxical situation which surges occasionally: as he never has sufficient time to get to the bottom of one topic, when it surges for the second time, he is obliged to start over from the beginning. It is vicious circle:

> **(Fd7):** “Las distintas tecnologías que me permite tocar. Que no estoy centrado solo en una. Eso a veces es contraproducente porque vez muchas cosas y,.. las conoces todas pero no sabes prácticamente ninguna. Es decir, a lo mejor te gustaría profundizar en un determinado tema que no puedes porque tu trabajo no es eso... cuando a la segunda vez tienes que volver y a lo mejor pues vuelves, ostia, si hubiese pensado la otra vez en como hacerlo, ahora no tendría que volver a hacer marcha atrás,... pero cada uno ocupa el puesto que ocupa y bueno (resignación). Es una lastima no poder profundizar algo que a ti te gusta pero lo que hay. También lo puedes hacer tus ratos libres”.

Despites companies provide necessary training and specialized courses on one side, and keep their employees motivated on the other side, sometimes it is not sufficient for employees to master the use of information technologies. Some employees report that they are not adequately prepared for certain work tasks. One of the possible causes of this abnormality might be too much theoretical information, and not enough practical or real-life situation applicability of the mentioned information. For some employees, this situation is frustrating and exhausting. They find themselves in the position in which they depend on their

colleague's willingness to help them out, explaining them or assisting them on some tasks. It was observed that this problems repeats among the senior employees who experienced the profound transformation of the way of working. In many cases, they were obliged to learn how to use an indispensable tool "computer". At their own admission, they addressed a lot of difficulties in order to learn the new skills, but even with special courses and training, they do not feel well trained to do their job. That is why they tend to ask the assistance to younger employees who had the chance to grow together with the mention technological advances, such as computers.

In the **section** of knowledge are analysed the variables trough which new skills and information are achieved. In this sense, the initial trainings represent the first step with which each company pretend to give a new employee all the necessary tools for his or her future work. However, from the obtained data, it cannot be confirmed that the two companies that participated in the study are doing well. Their initial courses, as well as updating courses and trainings obtained negative qualification from their employees. They did not provided to the employees the adequate level of knowledge required to accomplish certain tasks, causing them frustration and necessity to continuously search the assistance of other employees. One other overlook by the companies in reference to knowledge was observed: a lack of prevision of time necessary of assimilating the new skills. It has been proven that it is not instantaneous, and that it requires a period of assimilation. The interviewed employees confirmed this thesis. The storing of information seems to convert into obsession in some companies. They save all type of information and data, even if they know or need them. The latest hit is cloud storing at rented virtual server. The interviewees corroborate it, explaining the procedures they use to save the information. It should be acknowledge that there is lot of valuable information stored in companies´ databases, but it should be also mentioned that sometime there is excessiveness of information that leads to saturation of information, and to chaos.

Use of Information and communication technologies

In the section of information and communication technologies (ICT) are analysed the variable, such as the usage of ICT by the employees of the two companies of the food sector; the most used channels of communication between the employees, referring especially to the new technological ways of communication; and the problems that employees frequently meet when working with the ICT and how they cope with it.

ICT use

Depending upon the status one employee has in the company, depend which level of clearance he or she has to access to information saved in the system. Some information are secret, others are considered public, meaning that all employees have access to it. The interviewee says that it also depend what information one need in order to perform adequately his or her job:

> **(Fc1):** "Tenemos un sistema de gestión interno en el cual hay una gente que tiene unos permisos más elevados que otros, depende del tipo de trabajo, y hay otros que tienen unos accesos al sistema informático o en el cual están: el plan de formación, los planes de emergencia, toda una serie de cosas que tiene acceso todo el mundo y otras más particulares. En función del trabajo que desarrollado tienes más acceso o menos".

This interviewee, who has executive status, affirms that she is likes a lot everything that has something with technology. She highlights the importance role that technology has at todays manner of work, although, she recognizes that it sometime can complicated as well. She numbers/ cites, numerous technological equipment and gadgets that she has at her disposition. She admits using social networks as a tool for her work. Generally, the interviewee believes that technology serves for facilitate information rapidly and back up everyday work.

> **(Fc1):** “Soy un poco adicta a la tecnología. La tecnología está para facilitarte la vida laboral, aunque a veces te la complica, del aquí está la gracia, cuando funcionan bien las cosas es mucho más fácil acceder a las cosas. Yo tengo un ordenador y tengo un portátil que trabajo desde casa como si estuviera aquí. El móvil, WhatsApp, Facebook, Twitter, LinkedIn, tablet, absolutamente todos los elementos informativos y tecnológicos que están a mí alcance. Hoy en día las redes sociales tienen mucho peso, y depende de qué tipo de trabajos hagas, es una manera de darte a conocer y conseguir clientes o conseguir algún servicio. El ordenador cuando no lo tienes estás al revés, por desgracia, pero es así, y es básico para agilizar. Pienso que las tecnologías están para apoyar nuestro trabajo en general”.

The same interviewee stands that the program they use at her company is not complicated to/for use. She states that everyone with the basic notion of computer can easily use it. And she affirms that no one has any difficulty to manage that program. The interviewee explains how works the system of management that they use. She points out that this integral system of management was especially created for this company. Apart, they have other programs they use which are personalized for the company’s need, such as accountability, production, billing, etc.:

> **(Fc1):** “El programa no es complicado de utilizar, creo que es cuestión de lógica. Que te tienes que saber mover informáticamente. Si eres mínimamente un usuario avanzado ese informática, que sepas hacer algo más que una carta, es de fácil acceso. Yo tengo acceso a muchas cosas pero no es complicado para nadie. … Tenemos un sistema integral de gestión que está creado para nosotros exclusivamente y luego tenemos programas de facturación, contabilidad y producción que no están creados para nosotros pero tienen una adaptación específica para nosotros”.

The next interviewee describes how she sees the utility of technology for her every day work. She says she has access to Internet, but she and her co-workers rarely need it for the work. She admits that actually they are not custom to use it the interviewee furthermore explains how she discovers new functions; she applies method of observation and take her time to process it before apply it. The interviewee considers the most important to understand how something works, and if not, then ask some who knows it:

> **(Fc3):** “No, haber tenemos Internet pero, a veces no lo utilizamos como nuestra herramienta de trabajo, digamos que no es la costumbre si hay que hacerlo si alguien te pregunta algo concreto sí, no es lo habitual. … Un poco, no para nada, a ver es que descubres cosas sin andar buscando la vas mirando y al ir indagando aprendes más, lo que luego no entiendas está claro que te lo tienen que explicar, pero en ese sentido bien”.

By now, it was confirmed that the majority of the interviewed employees have the assigned computer equipment, or at least have access to it. Except those who have a short-term work contract, that in some cases is valued as unnecessary by the executives point of view. The last ones, in many cases do not even have access to the information stored in the databases which they need for everyday work, and are obliged to ask their fellow colleagues to lend their codes in order to accede to the information. In this part are explained the benefits of working with the new, modern computer equipment, which the interviewees consider valuable asset for the work.

Comunicación

In this section are analysed the communication channels that are used for work purpose. As mentioned before, the new technology has changed the traditional manner of work. Naturally, it influenced the mode of how employees communicate with each others as well. In the following testimonies are described some of the most used tools of communication at work.

The interviewee states that she frequently uses emails and telephone to communicate with her co-workers. However, she says that there is an emergency, she chose a personal contact, meaning she goes and speak face-to-face with the person in question. The interviewee also points out some negative sides of faceless contact, above all email communication. She does not like the fact that emails mark her priorities; she considers that she is capable to perceive which are current and urgent task that has do be done first, and which can be postponed for after:

> **(Fc2):** “Correo electrónico, llamada de teléfono y en caso urgente presentarme en el despacho, si cara a cara si es verdad que he hablado mil para un curso de gestión del tiempo, porque a veces quiero abarracar todo y no llego, y a veces pasan cosas importantes y por prisas acabo haciendo las que primero tengo, luego hablaba con la compañera que el correo nos maraca el orden del día cuando no debería, sabes que tengo estas prioridades estas más urgentes y más importantes, y luego pues según el correo, vas viendo, y el correo es llegar sentarme y correo”.

The next employee specifies which is the most common topic of the conversation with her colleagues, as well as which are the usual means of communication. First of all, the interviewee says that uses social network – Whatsapp, emails, and telephone, as the principal tool for communication. Second, she affirms that she uses it to exchange information in reference to products they sale. She emphasis that, when there is an emergency, the telephone call is the most recommended and the most efficient tool:

> **(Fc3):** “Lo básico de la información, vendrá este pedido, habrá que devolver esto, un poco de relación aunque no estemos juntos en los mismos turnos pero relación si, a veces por WhatsApp, con la otra tienda por correo electrónico, o a veces por llamada de teléfono, es más fácil llamar y pasa esto, esto y esto, depende la importancia que tenga y sino una noto del uno al otro, comunicación tiene que haber, sino mal. … si es algo urgente, tengo que llamar si pero prefiero, fuera del horario no molestar, lo intento”.

The next interviewee, who situated high in the company’s hierarchy, points out the importance of being informed about everything that occurs in the company. For that purpose, she uses emails, Whatsapp, also a telephone. She indicates that those tools permit her to be informed at every moment, and facilitate rapid and agile response:

> **(Fc1):** “Yo utilizo mucho el correo y el Whatsapp y también el teléfono, intento cuanto menos mejor, pero a veces es inevitable. Para mí es básico para estar informada de lo he pasa y dar respuesta rápida y fácil a los problemas que pueda haber, estés donde estés”.

She moreover cites which are the programs that she uses with the major frequency at work. She names three programs from the Microsoft Office, which in her opinion are excellent tools which allow numerous actions. After, the interviewee mentions other programs that they have for other tasks, but she does not enter to deep in the explication how those function or who use them. It seems that the interviewee has limited notion of how the mentioned programs work:

> **(Fc1):** "Los tres programas que uso aparte de los que han hecho para nosotros son: Word, Excel y correo electrónico. Yo utilizo mucho el Excel, es un programa que te ofrece muchas ventajas pero que hay que saber utilizarlo. El Excel te permite cuantificar, enlistar, formular, te permite hacer muchas cosas, es un programa básico. El programa de gestión de personal, el programa de facturación, el de nóminas, son una serie de programas específicos y luego los programas que te ofrece Microsoft".

In opinion of the next interviewee, the best way of communication is by phone. However, she suggests that the email correspondence has it advantages. It is traceable:

> **(Fc4):** "Normalmente nos comunicamos por teléfono, es más rápido, por mail es para que quede constancia, o para pedir mercancía, o porque tengo que pasar la hoja de traspasos conforme esto. Realmente es más práctico por teléfono".

In the following testimony are detected two approaches in reference to communication; depending weather it is a question of communication with her subordinates or with her superiors. With her team (subordinates), the interviewee prefers face-to –face contact. She says this communication is common for day to day work, and usually does not require written evidence. In addition, she says that her team count small number of persons, so it is totally feasible. To communicate with her superiors, the interviewee prefers personal contact as well, but if not possible, she uses a telephone. She, however, states that, after the personal or impersonal (by phone) conversation with her bosses,

she likes to leave written evidence in the form of email to repeat and reinforce the important topics that were discussed previously. Other channels of communication that the interviewee mentions are the computer programs of stocks, sales, prices, product specifications, etc. In her opinion, these programs serve as tools of communication, but are actually source of information in real time. The interviewee admits that without them, they would be lost and could not to their work. She says that they realize the importance of those programs when they start to fail. She uses a work chaos to describe the situation when the system fails, implying that they are not capable to do continue working. Other channels of communication that the interviewee cites are Whatsapp, which is an very popular at her company, for both superiors and subordinates:

> **(Fd5):** "Lógicamente con mi equipo intento que la comunicación sea siempre cara a cara en temas cotidianos y que no requieren evidencia escrita. Al ser un equipo pequeño casi siempre puedo hacerlo. Con mis jefes y otros departamentos siempre intento que sea comunicación cara a cara, si no es posible, utilizo mucho el teléfono, luego si tratamos temas importantes suelo reforzarlos con un correo electrónico. Para lo que no es tan urgente o para temas que requieren evidencia escrita utilizo también el correo electrónico, que no interrumpe el trabajo de la gente y deja evidencia escrita. Luego tenemos la herramienta informática de la empresa, en ella esta casi toda la información importante, desde inventarios de cada producto, precios, ventas, características de los productos, etc. Hoy por hoy esta herramienta es clave, cuando falla esto es un caos, nos bloqueamos porque ya no sabemos hacerlo sin ella (ríe). Actualmente yo diría que estamos casi atados a las herramientas informáticas. Claro, ahora usamos mucho el Whatsapp a todos niveles, desde jefes a gente de mi equipo. Es hoy por hoy la manera más fácil de contactar a una persona, sabes que el Whatsapp siempre lo revisan y como todos tienen, pues es fácil".

The interviewee says that she has contact with approximately thirty, forty persons at work. By her description, it can be concluded that she developed a formula for the communication with her co-workers; she first call by phone to explain a certain issue, then she writes an email in order to avoid the possible misunderstanding/misinterpretation. The interviewee, although prefers the face-to-face communication, insists in written form of emails which leave a trace:

> **(Fd6):** "… unas 30,40. La comunicación es normalmente, primero llamo, lo explico por teléfono y luego por el correo, y así las cosas siempre quedan más claras. Me gusta trabajar de esta forma sobre todo, el hecho de no enviar algunas veces un correo puede llevar a que otra persona no lo entienda como tu. .... si la persona aquí, me gusta más trato personal, pero también envió un correo escrito".

The next interviewee appreciates the most the personal communication when possible. Is second choice is a phone. The least desirable option is to displace in order to meet the employees located at another location. He insists that the last represents the waste of time. In any case, the interviewee says, it is required to back up in email form, attaching the important documents:

> **(Fd7):** "Comunicación de este centro - prefiero personal. Si puedo personal y si no puedo, pues teléfono, porque si necesitas de hablar con la gente que esta en otros centros, claro desplazarte, es perder el tiempo. Y después del tipo de comunicado que tienes que hacer, a lo mejor requiere un correo electrónico para comunicar a más personas o si hay un tipo de afectación concreta, pues también que sea público. Existen también los formularios internos, que esto estas obligado de hacerlo por....a través de correo electrónico adjuntándolo los distintos impresos".

In addition, the same interviewee mentions one other tool that is frequently used in his company. It is the Microsoft´s program called Communicator. This program is a chat that allows rapid communication between employees of the company. The interviewee also points out the negative sides of this tool. He says that it serves as a tool to control employees:

> **(Fd7):** "De hecho ahora mismo con el Windows 7 y todo esto hay un link, un communicator, que es una herramienta más que nos ayuda en compartir de información de forma más ágil. Me parece bien. Este control también permite el control de presencia pues, a lo mejor a alguien eso no le parece bien pero a mi me da igual".

The importance of the company's system which contains all relevant information is considered as one of the most important tool of communication for this interviewee. He claims that, moreover, the system has a role of intermediary

trough which him and his colleagues communicate. Besides the mentioned system, the interviewee uses other channel of communication, such as email and phone:

> **(Fd8):** “Principalmente correo electrónico y teléfono, porque mucha de la información que compartimos ya está en el sistema y cualquiera puede acceder a ella en todo momento. Si no fuera así habríamos de hacerlo nosotros, en este sentido el sistema nos ayuda y agiliza el acceso a la información. Si yo necesito información no he de pedirla a otra persona, basta con buscarla en nuestros sistema”.

Soporte tecnico x asuntos de informatica / Problemas ICT

It was detected that it is not always easy to face the new technologies. In the following testimonies was observed that it is not unusual specialised technical assistance. The next interviewee explains that the same person, who created a special computer program for the purpose of the company, is the person who coached executive staff of the company. The programmer personalized the program according to the company’s requirements. And, as the interviewee points out, the program is continuously update and improved by additional functions as the work requires it. For that reason, it is necessary continuous updating of the employees´ knowledge about the program. As it occurs, sometimes it is necessary rapid response to the problem, and in that situation, the most expected step is to contact with the programmer. The interviewee affirms that she is in permanent communication with the programmer, who when is required, gives a rapid solutions:

> **(Fc1):** “La misma persona que ha desarrollado el programa evidentemente te lo desarrolla en función de las demandas que tú le haces, con lo cual hay muchas reuniones de trabajo para conseguir los datos que tú quieres explotar y evidentemente nos han hecho una formación que se va actualizando a medida que vamos añadiendo nuevas cosas al programa. Puedes hacer todas las consultas que quieras por teléfono o por correo, y así vamos teniendo más conocimiento del programa. … Cuando hay algún tropiezo hablo directamente con el programador. Yo le doy un uso más elevado que el resto”.

Similarly to the previous interviewee, the next one describes the process of collaboration between the programmer and the employees who work with the program he developed for the company. She says that they collaborate in the way that they expose what they would like to do with the program, propose some ideas which the programmers evaluate, and when is possible, implement in the program; or in the case it is not possible, explains for what reasons it is not feasible. They generally communicate by email, as the programmer is located elsewhere.

> **(Fc2):** "Si tengo que decir que hay un informático que se encarga de todas las cosas que le dices, él lo coge y te dice si es buena idea o no porque no lo haces así, que creo que siempre está dispuesto a darte una mejora, no está por aquí por el centro, pero tú le mandas un correo y enseguida lo tienes, te ayuda y te hecha la mano".

The same interviewee emphasis the importance of technical support that they have. For example, at the beginning, the interviewee was meeting frequently problems working with the program. She says saw everything strange and not user-friendly. After a time, with the praxis, she arrived to master the program. Nevertheless, time to time, surge the issues, but now, she admits, she immediately sends an email to technical support, knowing by the experience that the assistance will be prompt and efficient:

> **(Fc2):** "… al principio era rarísimo, no me gustaba nada y todo lo encontraba una complicación y cualquier coso que quería hacer era, como un no me sale, pero ahora con el habito pues ya me sale y con un poco de explicación pues enseguida lo tienes y ya te digo cuando me encuentro con alguna duda o alguna cosa que no sepa yo resolver y enseguida le paso al informático un correo y te explica, y si ya no se te queda pues que te lo vuelve a repetir, tenemos el soporte informático que es bastante bueno".

Incompatibility between the programs in can create problems in work. As the next interviewee explains, it frequently arrives that their clients ask them to provide information in special form. As their program does not support the

desired form, they are obliged to exceptional modifications and corrections which are time consuming:

> **(Fc2):** “Tiene unas restricciones, haber cada cliente, tiene su forma de trabajar y cada cliente nos pide una forma de factura con sus condiciones y su forma de hacer, nosotros tenemos la nuestra pero a veces te limita a esto que te está pidiendo el cliente, por ejemplo que el cliente quiere cuatro decimales y nosotros trabajamos con dos, o quiere un texto que indique en la factura, la línea en verso, entonces nosotros tenemos, entonces pues lo intentamos reducir al máximo, y decirle al cliente que nos adaptamos a lo que el programa nos deja, es decir que lo haremos lo máximo posible adecuándonos a lo que ellos requieren, pero sabiendo que tenemos esta limitación, bueno son cosas que enseguida el cliente, te lo acepta porque es lo correcto que lo hagas de esa manera y no hay problema, pero es bastante útil he, dentro de estas limitaciones. … pero es laborioso es decir hace falta tiempo para hacer cada una de las cosas, entonces es relativamente útil”.

And this interviewee expresses the similar issue of incompatibility between various programs used at his work. He implies that it difficult the work because they all have different protocol that regulates the process or management of information and data:

> **(Fc4):** “Cada carpeta engloba un tipo de trabajo, no son compatibles entre ellos. Cada cosa tiene su procedimiento para trabajar”.

The permanent advances in technology, in order to make the work easier or more efficient, in some occasions might have a negative impact. Although they provide undoubtable benefits, those who have to use it, have to acquire certain level of knowledge about how the equipment works and it’s functions. This means that with the continuous technology improvements, employees have to be continuously updating their knowledge. During that process, almost always surge issues that employees do know how to solve. In those situations, they usually address to specialized technical assistance. By the data obtained from the interview, the previous statement refers principally to top and mid-levels employees; it is not observed that lower-level employees have equal access to

technical support. Lower-level employees usually count on the assistance of their fellow colleagues, which are situated in their proximity. Employees, who have access to technical support, generally use email or telephone as means of communication to ask for support, as the technical support is usually externalised. One of the most commented issues that employees confront on daily bases is incompatibility between systems or computer programs they use. As that issue seems do not have a positive solution, employees use their creativity in order to overcome it. Finally, it can be said that although the technology is important, it maybe more important to have qualified employees that will know how to use it properly.

4.2.7 Interpretation and analysis of the empirical results

Social capital Conclusion

The companies behave like societies. The first take the local culture and mentality features and modify them so that they fit according its needs. It is also true that the employees influence the organisational culture of the companies. The influence is mutual and flow in both directions. The social component is very important for the functioning of one company. Through the net of social contacts one arrived to be hired or promoted. Or else, close contact with the fellow colleagues will permit more fluid communication and collaboration. In time of excessive work, the colleagues are there to help out, as well as there is doubt how to proceed with some task. Social component shape the work environment, creating pleasant working climate that help reducing stress in time of excessive work or tensions of other type. Making social ties within the company allow the transfer of work experience and knowledge from the senior employees to younger employees. Although much of the information can be save in some form, there are certain details that cannot be described by words, and therefore saved in companies´ files. That is why it is so important to nourish the spirit of collaboration and promote transmitting the work experience, especially of those employees who soon are be retired.

Knowledge conclusion

In the **section** of knowledge are analysed the variables trough which new skills and information are achieved. In this sense, the initial trainings represent the first step with which each company pretend to give a new employee all the necessary tools for his or her future work. However, from the obtained data, it cannot be confirmed that the two companies that participated in the study are doing well. Their initial courses, as well as updating courses and trainings obtained negative qualification from their employees. They did not provided to the employees the adequate level of knowledge required to accomplish certain tasks, causing them frustration and necessity to continuously search the assistance of other employees. One other overlook by the companies in reference to knowledge was observed: a lack of prevision of time necessary of assimilating the new skills. It has been proven that it is not instantaneous, and that it requires a period of assimilation. The interviewed employees confirmed this thesis. The storing of information seems to convert into obsession in some companies. They save all type of information and data, even if they know or need them. The latest hit is cloud storing at rented virtual server. The interviewees corroborate it, explaining the procedures they use to save the information. It should be acknowledge that there is lot of valuable information stored in companies´ databases, but it should be also mentioned that sometime there is excessiveness of information that leads to saturation of information, and to chaos.

ICT final conslusion

The progress in the field of ICT in the last decade is more that evident, and it is accelerating. It changes not only the way of work, but our mode of life as well. There are hardly any parts in the world which still are not connected in the giant net of World Wide Web. We, as individual are adapting to this new reality, but the companies as well. The ICT enormous potential faculties the work, reducing the time necessary for realisation of work tasks, saving the entrepreneur time and money invested. It saving the money, as the machines or computers are able to do faster, more precise or more efficient the work. Besides, although they need adequate maintenance, they do not have vacations, or get sick, and that is why businessmen prefer to invest in them that to human resources. For the moment, the human race is still controlling the machines and computers, but

with the appearance of artificial intelligence (AI) which is gaining the terrain every day, it is not clear that we could keep the rhythm. Out physiological capacity are limited, and AI has potentially unlimited capacity to learn, understand and apply stored knowledge. Fortunately, today we are still in charge of the technology, so we need to know how to use it properly, in out benefit, and create an additional value with it.

4.3 Third case study– Software

4.3.2 Introduction

In the last years, software industry has transformed the way any kind of organization, businesses and people works. Its impact on the world can be perceived in any field (Industry, education, health, entertainment, communications, military, etc.), software is been used to increase innovations, increase technical progress, improve productivity, improve communications and coordination, etc. Even if we don´t know the exact definition of software, all we know that the impact of the "called software" in our lives is very big. Every day we use multiple software for different things (computers, mobile phones, cars, home appliances, health, communications, etc.

"Software" refers to computer program or data, which can be stored electronically. It's used by the computer processor to perform various tasks. Mobile software applications (or apps) work in the same manner as their computer software.

The software industry is involved in the development, marketing, and sales and is multifaceted. Its scope ranges from personal computer applications, operating systems, network management tools, enterprise software, software applications, operating systems, and customized software.

In recent years the impact of the software industry on the world economy has been increasing and it is expected that this tendency continues for the next decade.

Software industry is expected to be the fastest growing industry, followed by **information technology consulting** and **systems integration services**.

IT consulting refers to the advisory services that help clients in assessing the benefits of different technologies. It helps formulate a suitable technology strategy to align it with clients' business strategies.

System integration refers to the process of making diverse hardware and software components work together as a system. It's a value addition process of linking different computing systems and software applications so that independent applications work as one.

The majority of funds allocated for IT spending goes into software development, which clearly indicates its dominance.

The emergence of cloud, mobile computing, and applications like business intelligence and analytics are making sure that the growth of the importance of software systems will continue.

Nowadays software industry is one of the most innovative industries in any country, also as mentioned above, his impact on economy is growing. For any developed country it is important to invest in software industry in order to remain competitive, besides, the possibilities of software to create new and better services for people is unknown.

4.3.3 Methodology

Eight semi-structured interviews were done in two companies pertaining to the software sector (four interviews per company). Four semi-structured interviews have been done in the company that we will call "A" (for confidentiality issues). The company has around 45 employees and it is located in downtown Barcelona. The company produces specialized software for service companies. This software is made according to the specific needs of the client, so there are many possible variants in the production process of the software. Workers of this company are mainly young people, engineers, informatics or young people with a high knowledge of programming in different programming languajes. Most of workers are young and 40% of all workers are women.

Four more semi-structured interviews were done in the company that we will call "B" (for confidentiality issues). This company has around 80 employees; it is located in Barcelona city; however, this company has a small office in Latin America and a small

number of people work from home. The company is dedicated to the production of software for phone uses. In this case, half of the interviews were done outside the company.

All interviews done have been transcribe into word, the most important ideas were selected and passed to a excel database, where they were they were classified and linked to the concepts extracted from the literature review and with data extracted from other interviews.

The methodology used in this case is explained in detail in the methodology section of this research. In the next section field research procedures and methods applied are presented.

4.3.4 Field research

4.3.5 Characteristics of study participants

Table 9 Characteristics of interviewed participants in software sector

Software								
INTERV. CODE	AGE	GENDER	STUDIES	POSITION	LEVEL	TIME IN WORK (Yr)	EXPERIENCE (Yr)	INTERVIEW DURATION (mins)
Se1	43	male	engineer	manager	med	15	18	50
Se2	35	male	master	manager	med	5	10	50
Se3	39	male	engineer	J. programmer	med	3	10	75
Se4	38	male	master	Analist	High	2	15	45
Sf5	40	male	Licenciado	Administ	Med	4	10	65
Sf6	26	female	engineer	J. programmer	low	1	1	27
Sf7	46	male	master	manager	med	20	22	35
Sf8	45	male	master	Manager	High	10	20	65

4.3.6 Results of interviews

In the Software sector case are analysed three major topics that include: social capital, knowledge and information and communication technology. Each of the three mentioned themes consists of the most relevant and related variables that were included in the interview guide. These variables were used with the objective to explore how organizations in the software sector and their employees manage these topics. From the interviews it was obtained rich information that enabled the following analysis.

Working environment

As expected, the majority of interviewees in the software sector describe their working environment as friendly. They confirm the ambience of mutual trust, as well as freely and open communication with their co-workers and superiors. It exists the idea that in this type of business, the use of informational technology for purpose of exchanging, sharing, and communication is the most present. But, in the case of our interviewees, it seems that prevails the practice of verbal communication over the use of IT, when it is possible. The next statements of the interviewees confirm the existence of pleasant working atmosphere, defined as less formal, more relaxed and liberal:

> **(Sf6):** "El ambiente entre compañeros es muy amigable. Hay confianza con los compañeros y los jefes…presencialmente o vía Skype".
>
> **(Sf5):** "bastante informal, a veces yo diría que demasiado informal".
>
> **(Se2):** "Donde estoy ahora puedo decir que es un ambiente distendido".

As it can be seen, all interviewees evaluate highly the good working ambiance, as it excludes the presence of competition between them, which may lead to tense and problematic situations. At the same time, the interviewee (Se1) points out the positive side of this type of working environment; that is cooperation.

> **(Se1):** "Bastante informal,…nos llevamos muy bien todos. Es un ambiente que no es tan competitivo, es más cooperativo… para llevarse bien hay que estar en un ambiente que no sea tan tenso o demasiado competitivo".

As aforementioned, the positive working environment is common to all our interviewees. The next two testimonies exemplify differently the origins of the

good working atmosphere in their respective companies. The first claims that one of the company's policies is to provide to its employees feeling comfortable at their working place. Meanwhile the second states that the pleasant working environment is created by the employees themselves, and their passion for this type of work:

> **(Sf7):** "La política de la empresa es que tienes que sentirte cómodo, no tratarlo como un castigo".

> **(Sf7):** "Tema social, de hacer bromas y eso, pues cuando vamos a tomar café". "Uno de los puntos principales, …es la pasión del trabajo, la honestidad,…es más como una familia,…no es como un trabajo seco".

Generally speaking, the topic "working environment" is, or should be considered as very important, as there are many studies that suggest that the productivity, efficiency and effectiveness depend much upon how the employees perceive their working ambiance. It deserves to be addressed special attention to it.

Good working environment does not exclude automatically the professional exigency.

Although the work environment may be interpreted as informal, there are evidences that it implies that employees tend to involve deeper in their work tasks, complying a marked objectives and reaching the proposed goals. In addition to accomplishing the work objectives, there is another traditional indicator of work that is still very much in use, and surprisingly popular in some companies. It is a working hours or work presence indicator trough which is monitorized or supervised a work or work progress of an employee. In Spain, this work measurement mechanism is known as "*fichar*", and is frequently criticized, as it bases on purely and exclusively on employee's physical presence at the work place, excluding his/her real contribution to actual work progress. In this case, it seems that companies measure work productivity not only based on hours of work but on accomplishment of goals.

> **(Sf8):** "Bueno, no es demasiado relajado, aunque tampoco es muy serio. No se habla mucho; eso tiene algunas ventajas, te puedes

> concentrar mejor". "Trabajamos 8 horas, este horario incluye la hora de comer y pausas para fumar, el resto del tiempo se trabaja duro".
>
> **(Sf5):** "En cuanto a objetivos, sí, teníamos un objetivo anual,…,yo diría que había una mezcla en cuanto a horario y objetivos, había que cumplir tanto los horarios como los objetivos".

A pleasant working atmosphere seems to nourish good interpersonal relationships between co-workers and flourish cooperation and teamwork. It is not clear who is a responsible for it: is it a company and a company's recruitment policy to hire a certain psychological profile of persons that will fit to existing group climate, or they are proper employees themselves that mould and shape the "newcomers" transforming them into a part of their group. In any case, the "newcomer" can accept or rejects adopting the existing norms and values. But in the last case, if he/ she become an "outsider", it may lead not only to exclusion from the rest of the co-workers, but may end by a dismissal. There is alternative scenario, in which the "newcomer" refuses to accept a group synergy, and the company decide to keep him/her anyway, but the existing group balance is touched and the good working environment is menaced/ is at risk.

> **(Se1):** "La empresa tiene la suerte o la habilidad de que ha cogido la gente que trabaja en grupo". "En cuando tú entras en la empresa, te das cuenta de que hay buen ambiente. Intentan que en seguida te sientas en familia".

In terms of social capital, trust, cooperation and good communication has a positive impact on it. It seems that in the software sector, at least for interviewed persons, it tends to be a good level of social capital. Also the fact that the working environment be at the same time formal and informal, may have a positive impact on many organizational aspects, between them learning and knowledge creation. The informal part facilitates better communication and cooperation, and the format parte gives some structure and rules that have also a positive impact on relational social capital. Concerning good working environment, two variables are detected, on one side the interest in the management of the company to maintain a good environment, on the other, it is

detected that workers show certain personal interest and passion for their work which tends to make easier working relations because people is motivated to do their job and get better results. Contrary to what could be expected, it seems that workers in software sector tend to prioritize of verbal communication over the use of communication through IT, like email or chats. It is expected that this have a very positive impact on social capital and knowledge creation. In terms of knowledge creation, it is expected that good face to face communication may have a very positive. Concerning working environment in software sector, it is detected characterized by positive working environment, cooperation, face to face communication, right mix of formal/informal relationships between workers, trust and people motivated about the work done.

Cooperation and sharing knowledge

As mention previously, in a good working environment, cooperation and teamwork are common between co-workers. The interviewees confirm that there is a tendency of facilitating, sharing and exchanging information with their colleagues at their companies.

> **(Sf6):** " …había un compañero que necesitaba hacer una consulta yo les enseñaba y les hacía una aplicación para que pudieran obtener la información que necesitaban, hacer estadísticas y todo lo demás".

As we understood, there is a distinction between sharing the information related to access to company's information (saved in a certain type of databases), and on the other side, teaching or transferring a proper knowledge of one employee to another. In the case of our interviewees, both are present:

> **(Sf6):** "Todo se comparte, además como yo tengo acceso a toda la información, tampoco tengo mucho problema".

> **(Sf8):** Con los demás compañeros no hay problema, se intercambian las informaciones; así se trabaja mejor y es más fácil. Este trabajo en realidad es trabajo en equipo. Hay mucha información y todos tenemos diferentes tareas. Pero no hay tiempo de interesarse mucho en el trabajo de otro, pero es importante pasar la información porque de ella dependemos todos. Si alguien tiene un problema, se ayuda. La lógica dice que probablemente alguien tuvo el mismo o parecido

> problema antes, así que se ayuda con algún consejo con alguien que tiene más experiencia... De esta manera se resuelven más fáciles los problemas".

It is logical to think that cooperation benefits everyone. In the situation of interdependency, where one's work task depends of his/her co-worker, the best solution is collaboration in order to accomplish successfully a desired objective. The following testimony confirms this win-win strategy:

> **(Se1):** "Si, se coopera totalmente,… dependes de cuando uno acaba, tu empiezas, hay una cadena. Si una persona se quema, tu también estas afectado".

> **(Sf8):** "Colaboramos, hay intercambio de información.,… generalmente son muy abiertos, no tienen problemas en compartir y son amables., …, dependen de nosotros, de manera cuando ellos tienen problemas, ellos acuden a nosotros para resolverlos o crear nuevas soluciones."

It appears that in the software sector, the process of collaboration passes, in a good part, trough the company's integrated information systems, which are in charge to link all the company's activities. It includes the majority or all internal company's processes, which are used by the employees in their everyday work. In certain way, the employees feed their company's databases by entering new data and continuously updating the existing data, reflecting the ever-changing information. Thus, databases may be considered as an entity that connects employees, and in a certain manner pushes them to collaborate in order to keep it alive.

> **(Sf7):** "Somos un equipo,…, bueno SAP es muy complejo, tu puedes saber una cosa, pero otra no y necesitas ayuda y eso mutuamente".

> **(Sf5):** "sí que tenía relación con los otros departamentos, tenía que trabajar en equipo digamos, porque cuando había problemas, entonces era de estar en constante contacto con otros departamentos, llamarlos, estar enviándonos emails, escribiéndonos en el chat de la oficina, en ese aspecto era un trabajo de equipo".

> **(Sf8):** "toda la información se guarda para posterior uso. El acceso a la información es fácil, pero hay muchísima información".

> **(Se3):** “Lo que una persona implementa ya se queda documentado…todo está guardado, documentado… en este programa de seguimiento GIRA,… al final todo se queda”.

> **(Se2):** “Aquí sí que se dispone de unas herramientas para plasmar en todo momento los cambios que se hacen y porque se hacen…todo eso se documenta”.

It appear that in software sector work team is very extended practice, people understands that this type of work necessarily requires cooperation between colleagues and knowledge sharing. Software creation is an activity based on knowledge and workers understand that sharing knowledge may be a win-win strategy. The fact that in recent years many activities and companies related to software are based on knowledge sharing (open source Softwares, Linux, Android applications, Open office, Wikipedia, etc.) plus the fact that most of workers in software companies are young people that has been in contact with computers and software almost all their lives, makes easier for them to naturally cooperate and share knowledge in their daily work.

> **(Se4**):”Mi trabajo necesariamente involucra a otras personas”.

One important factor in order to promote collaboraration, knowledge creation and improvement of social capital, are the norms established by the management. Working processes and norms in software sector seem to be in line to the promotion of work in teams and sharing information and knowledge. Also, it is clear that information systems used by the company shape internal process of organizations. The next interviewed explains how processes in their company are aligned to promote cooperation, work team and the use of the information systems.

> **(Se4):** “La programación como la hacemos nosotros en esta empresa es siempre un trabajo en equipo puesto que dividimos el código en distintas funcionalidades (bloques y sub bloques), cada programador modifica diferentes partes. No es que una sola persona programe todo. Hay varios cerebros en el software trabajando conjuntamente, obviamente esto requiere un management del proyecto muy eficiente, por eso utilizamos herramientas como JIRA que nos permiten gestionar la evolución del Software de manera eficiente, ordenada y online”.

The idea that most of people has about programmers as solitary genius, seems not to be a good profile for companies in software sector. As commented by the next interviewee, software companies look for programmers that are able to work in teams and collaborate. Also, because of the way processes are organized internally, besides, programmers with a solitary genius profile usually do not adapt to the company. It is also interesting to mention that the profile of the cooperative, team worker programmers is very positive for the improvement of social capital, learning and knowledge creation.

> **(Se4):** Considero que si, en este negocio la colaboración y el trabajo en equipo son fundamentales. El perfil del programador genio y solitario no es adecuado para este tipo de trabajo, de hecho hemos tenido al menos un par de chicos con ese perfil y ellos mismos terminan por cansarse de este trabajo, ya sea porque no soportan que se les dirija la programación, por los horarios, por la necesidad que hay en esta empresa de adaptar el código de cada programador al del resto, etc. Eran muy competentes, pero no nos eran útiles aquí.

People in software sector seems to be aware of the important paper that collaboration has for the software sector, especially in the area of programming. Also, as the next interviewed comments, even if communication is every day more frequent through electronic means as email, chats, social networks, etc., there are always protocols, rules and processes that help to establish good communication and relationships of cooperation.

> **(Se4) :** "Me parece que estamos en un momento en que la colaboración es la clave, al menos en el sector del software, como ejemplo tenemos muchas iniciativas colaborativas como Linux, Android, etc. Miles de programadores alrededor del mundo colaboran y obtienen productos bastante competitivos. Para una buena colaboración es necesario que existan buenas relaciones entre las personas, también es verdad que el termino relaciones es un poco relativo hoy en día, porque con las tecnologías de la información las relaciones son cada vez más electrónicas y menos cercanas, sin embargo, aún en la comunicación electrónica hay ciertas reglas, protocolos y códigos de conducta, en resumen, si, las buenas relaciones ayudan".

Work team and collaboration are recognized as efficient ways in order to solve problems. In order to collaborate, people uses all kind of resources they have, such as email, chats, telephone, etc. People has a clear vision about the importance of team work, collaboration and cooperation.

> **(Sf5):** sí que tenía relación con los otros departamentos tenía que trabajar en equipo digamos, porque cuando había problemas, entonces era de estar en constante contacto con otros departamentos, llamarlos, estar enviándonos emails, escribiéndonos en el chat de la oficina, en ese aspecto era un trabajo de equipo.

It is very clear that in companies of software sector, people have a very clear vision about the importance of cooperation, team work and collaboration. There is a tendency to share information within colleagues, and to collaborate through face to face communication or through the company's integrated information systems. It seems that management of companies in this sector understand that this type of work necessarily requires cooperation between colleagues and knowledge sharing, and in consequence they organize work and processes in line with that, also they get information systems that help people to work cooperating and sharing knowledge.

Compete

Competitiveness is sometimes considered a positive characteristic, and sometimes a negative characteristic. Usually, superiors affirm that they considered it as positive; they think that as their subordinates compete between them improvement will be obtained. For them competition will bring better results, and therefore more money. On one side they may be right. But, what happens when in the process of competing, one employee starts hiding information, creates obstacles or employs illicit actions so that his fellow-colleague fails, turning him to a winner? That cannot be seen as positive, as it is the company that loses. Nevertheless, it seems that in the software sector, this kind of negative situations is not much present. In the majority of testimonies, it is found that employees are quite pragmatic persons that prefer cooperation

and collaboration over competition, although sometimes there is someone who likes to play a role of a "smart guy[9]".

> **(Sf5):** "Si había personas que se les notaba esto de la competición,…, había gente que quería lucir y entonces siempre gritando hablando, queriendo ser el centro de la atención, y claro haciendo esto no estaba trabajando, porque estaba demasiado ocupada en lucirse, creo que es algo que pasa por todas partes".

Social Capital – Communication – Knowledge Sharing

The role of communication, concerning workers in IT sector seems to be overlooked. There is an extended stereotype, very often promulgated by television series, of a "geek[10]" who incarnates a person who is devoted to programming and/or playing online games. This person is seen as a strange and solitary individual who communicates with the "extern" world by Internet. Generally, programmers and persons who work in IT sector, are often attributed with the absence of personal communication (face to face). However, the recollected testimonies from our interviewees contradict strongly this vision. Not only that they believe that the communication is essential for their work, they affirm that personal communication, when it is possible, is the best. Only when this last option is excluded, they reach for other tools of communication, like email, chats, forums, and in rarely occasions to phone.

> **(Sf6:** "Se necesita comunicación. El cliente quiere una cosa, tú buscas otra y el jefe quiere otra, por lo tanto has de hablar con ellos. Si no hablas con uno y no hablas con el otro y no sabes cómo juntar toda la información, es un poco difícil".

> **(Se3:** " ... si necesitamos aclarar cosas por ejemplo nos acordamos, te va bien hablar… quedamos y hablamos lo que se tiene que hacer para entender el tema mejor".

[9] http://www.thesaurus.com/browse/smart%20guy

[10] Geek = Friki

As affirmed by the next interviewed, information systems or software is not useful unless there is people involved, and communication between that people is enough good to help every element in the group better in their work making the right use of information systems, in this way it possible to extract the potential of people and machines.

> **(Sf6):** "El mejor programa no le servirá de nada si no tiene buena comunicación. La comunicación es indispensable en la programación".

Some of the interviewed persons affirm that they prefer whenever possible to establish face to face communication; mainly, when important issues must be discussed. The second most used communication channel is email, and the third telephone. Some of them argue that face to face communication is more effective when important issues are discussed, because people puts more attention to the ideas shared and it is easier to transmit them the sense of importance or urgency. This situation gives much more importance to social capital variables. It is expected that as better social capital is as better communication may be.

> **(Se1):** "Mail y el teléfono. Alguna vez videoconferencia, pero básicamente es mail y teléfono. Pero prefiero si es posible, cara a cara… Si hay una cosa difícil, prefiero personalmente. Si no es posible, me echo el teléfono".

The persons who participated in our research for the software sector, are been evaluated as open-minded, communicative, and persons who define themselves as cooperative at work. They testify that the knowledge that exists in their companies is not at risk, as it is saved in numerous databases at their servers. And not only that, some of them point out the importance of knowledge transfer or sharing knowledge from more experienced co-workers. That kind of knowledge is commonly transferred in the form of face-to face communication. It seems that the physical presence play an important role in this process. Like as the presence of the fellow-colleague produces something (microclimate) that

creates a positive environment for sharing at work. Also the use of information systems to communicate and save information seems to play a very important role in these companies.

> **(Sf6):** "…Los foros son muy útiles. Hay muchos foros que son muy útiles. Hay muchos que no sirven para nada, pero el conocimiento que yo tengo lo uso para filtrar las opiniones que sirven y las que no sirven, pero en general si son muy útiles. Después de ahí es muy importante el auto aprendizaje".
>
> **(Se1):** "Yo intento explicar todo a todos. Pero eso depende de la persona. Yo intento explicar todo lo que se del departamento a a la gente porque si algún día falto, como saben, es decir, intento explicar todo….Pero al cabo, estos 3 o 4 año…..casi todo el mundo en mi departamento por lo menos sabe cómo se hace".
>
> **(Sf7):** "toda la información está en los ordenadores y está controlado por SAP".
>
> **(Sf7:** " … pues consulto con los consultores que tienen muchos años de experiencia y o me dan una pista para solucionar el problema o te enseñan cómo hacerlo directamente y esta información después vuelves a nivel dos pasando lo que aprendiste".
>
> **(Sf8):** "hay gente que prefiere evitar el trabajo, pero te ayudara si le preguntas. Hay algunos si ve que tu está trabajando en un problema y se acuerda que sabe algo de este tema, pues te avisa rápido que hacer".
>
> **(Sf8):** "oficialmente utilizamos mails y Skype para chatear, presentaciones, audio y video conferencias, pero nosotros que estamos ubicado aquí preferimos hablar, es más fácil."
>
> **(Se3):** " ... si necesitamos aclarar cosas por ejemplo nos acordamos, te va bien hablar… quedamos y hablamos lo que se tiene que hacer para entender el tema mejor".
>
> **(Se3:** "Un compañero tiene que desarrollar algo y tengo que desarrollar algo yo, tenemos que probarlo como funciona,…sería imposible sin comunicarme por ejemplo con otro equipo porque yo para seguir necesito cambios de otra persona, igual como él necesita los míos".
>
> **(Se3):** "Trabajamos un módulo, yo con un compañero, podemos decir que formamos un grupo…Ya me ubico mejor en cada situación y normalmente… voy más ágil… con experiencia se aprende un poco".

(Se2): “Dado que tenemos gente gente en Colombia, en Estados Unidos, Sudamérica, Sudáfrica, pues nos comunicamos a través de Skype, lo hemos adoptado como una herramienta para comunicarnos entre todos, así tanto a los que están cerca como a los que están lejos, los tienes a todos ahí, por decirlo de alguna manera”.

(Se4) : “Me parece que estamos en un momento en que la colaboración es la clave, al menos en el sector del software, como ejemplo tenemos muchas iniciativas colaborativas como Linux, Android, etc. Miles de programadores alrededor del mundo colaboran y obtienen productos bastante competitivos. Para una buena colaboración es necesario que existan buenas relaciones entre las personas, también es verdad que el termino relaciones es un poco relativo hoy en día, porque con las tecnologías de la información las relaciones son cada vez más electrónicas y menos cercanas, sin embargo, aún en la comunicación electrónica hay ciertas reglas, protocolos y códigos de conducta, en resumen, si, las buenas relaciones ayudan”.

(Se4) : “Más que promoverse son obligatorias, los procesos internos de la empresa nos obligan a tener reuniones cada determinado tiempo, ya sea con los programadores (en mi caso como jefe de un equipo de programación) o con otros departamentos de la empresa. La dirección entiende que somos una empresa muy (digámoslo así) "conectada", pues contamos con software de seguimiento de proyectos cuya información es transparente y visible por casi todos los empleados y jefes, contamos con chats, correo electrónico, teléfonos, etc. Sin embargo ellos entienden que las reuniones presenciales siguen siendo necesarias. De hecho los directores generales se reúnen cada año un par de veces con nosotros. Yo tengo cada día una reunión corta con todo mi equipo, además vamos teniendo reuniones de cada proyecto durante la semana. Los coordinadores de Software tenemos una reunión semanal con el jefe del departamento”.

- the recollected testimonies from our interviewees contradict strongly this vision. Not only that they believe that the communication is essential for their work, they affirm that personal communication, when it is possible, is the best.
- are been evaluated as open-minded, communicative, and persons who define themselves as cooperative at work.
- - knowledge that exists in their companies is not at risk, as it is saved in numerous databases at their servers.
-

Social Capital – Working processes – Relationships with bosses

Generally speaking, the workplace interpersonal relation between employees and their superiors (“jefes”) is defined as freely, open and friendly. The

interviewees said they feel freely to make comments and express their opinions, and that their superior tend to listen them. Sometimes, their good suggestions are rewarded in the form of simple gests, like “good work” or “keep the good work”, and in some (special) cases rewards take a form of a branch or little cocktail party at workplace.

> **(Sf6):** “Sí, siempre me decían, muy bien, sigue así, etc”.

> **(Se2):** “ … hace dos o tres semanas se cerró una versión del producto y nos invitaron a un pequeño picnic en la oficina, en plan de agradecimiento por el esfuerzo, voluntad, es un pequeño detalle, yo lo agradezco, todo el mundo lo agradece, claro. Si, de alguna manera sí”.

However, not all bosses pay attention to above mentioned details. And not all employees expect them to do it. The following testimony obtained from one of the interviewee reveals up to what level he feels indifferent to his superior’s lack of acknowledgments for his contribution in projects. When we made him this question, his first reaction was unusual – he started laughing. Next, he tried to justify why his chief does not congratulate him or any of his co-workers for good work, when they accomplish one project successfully. It seems that this interviewee, being himself also one of the low-ranking chiefs, in certain way identify himself with his superior, and reproduce the same pattern with his subordinates. Only in the exceptional circumstances, he or his co-workers and subordinates may expect a modest way of official recognition for his/their work effort in the form of “thank you”:

> **(Se1):** “No (ríe). Lo que hay aquí, hay gente que lleva un proyecto y es un proyecto a largo plazo y a lo mejor tiene un solo timing en enero y tiene que entregar esta cosa... la verdad es que no, esto de "que bien lo hemos hecho, no", porque son cosas pequeñitas,…bueno, si alguien ha sacado algo, ha estado 2 noche sin dormir, claro que le dan las gracias, pero hay muchas veces que si alguien se ha de quedar por la noche, nos quedamos todos para ayudar”.

The next three interviewees point out the importance of trust between them and their superiors. They have “friendly” approach to their chiefs: they can, for example, discuss problem issues openly, or propose some improvements in a

large scale. One of the interviewees (Sf5) revealed that in his company they respect and reward employees effort to improve work processes, but at the same time criticizes indiscriminately distribution of this reward. He was bothered because, in occasions, not only were rewarded those who deserved it, but also the others who did not contribute at any way:

> **(Sf7):** "Con mi jefe directo no hay problema. Incluso el dueño ha dicho que si tienes algún tipo de problema o alguna idea que nos puede mejorar el negocio y eso, se puede mandar el mail y se toma en consideración".

> **(Sf7):** "Por ejemplo, con mi jefe directo hablo igual como con vosotros porque el objetivo es mejorar, no hay ningún tipo de, esto tengo que decir o mejor me callo o eso. Uno está más o menos abierto".

> **(Sf5):** "No, lo que hacía nuestro supervisor era apuntárselo todo para luego poder ver si sigue adelante con la propuesta, y discutirlo con los que tenía que discutirlo, porque bueno había otras personas en otros lugares que tenía que aprobar..... Sí, todo el mundo participaba. Si, había algún beneficio para nosotros. Para unos cuantos hubo un beneficio económico, porque el supervisor tenía el poder de subir de nivel a dos personas del equipo y de hecho lo hizo para alguna personas. No todos lo merecían".

In some companies, there is a clear pyramidal or hierarchical organizational structure. One of the interviewees considers it adequate, and defends these type of organizations, affirming that it is necessary the presence of the chiefs or superiors who dispose more information and know the "big picture" of the project that to be done. On the other hand, there is another testimony from the other interviewee that contradicts to the first one. It says that there is "so-called" and "self-proclaimed" chief why tries to impose himself upon his co-workers. It seems that this "chief" does not enjoy trust of the others, and is labelled as a weird individual.

> **(Se2):** "Lo que se intenta es mantener una cierta jerarquía, es decir, si yo por ejemplo detecto alguna cosa que creo que no está bien lo que voy a hacer primero es comentárselo a mi jefe directo por así decirlo, compartirlo con él él como ya tiene una visión más general, pues ya verá si eso que le estoy indicando debiera avanzar en cuanto a resolución se refiere, o no, y a partir de ahí, pues ya se va decidiendo sobre la marcha".

(Sf8): “bien, pero es un poco diferente. No es la misma relación. Aunque salimos con él alguna vez, pero no es algo habitual; él es un tipo un poco raro, diferente. En realidad, el no es mi jefe. Hay un jefe de verdad, pero él está en Francia, y "el jefe" realmente es algo como team leader, pero el actúa (se lo toma) de otra manera, imponiéndose como un jefe de verdad”.

The next interviewee affirms that in his company, relationship with bosses is generally good, even if some time there are working differences the relationship tends to be professional and respectful. In his personal case, given the number of years he has worked with the same direct boss, their relationship is open, there is good communication and trust, also the level of supervision is low.

(Se4): “en esta empresa la relación con los jefes y coordinadores es siempre bastante cercana”.

(Se4): “Yo la definiría como profesional, solo así. No de amistad. Como es natural con algunos hay un poco más de fricción que con otros, pero nos respetamos”.

(Se4): “Para mi gusto hay dos formas de verlo, por un lado esta lo que promueven oficialmente y por el otro lo que la dirección de la empresa y todos los jefes promovemos a través de nuestro trabajo diario. Esta empresa como casi todas las empresas hoy en día promueve entre sus valores y políticas el trabajo en equipo, la colaboración, el liderazgo, la pro actividad, el trabajo con calidad, la eficiencia, etc. Todo esto forma parte de lo que la empresa quiere, y si, de alguna manera lo promueve o lo busca entre sus empleados. Por otro lado, supongo que como en todas las empresas, existen algunos coordinadores o jefes que lo promovemos con el ejemplo y otros que no. Yo personalmente encuentro que de manera general el ejemplo de los jefes a los empleados existe, también son conocidos algunos casos claros de lo contrario y sabemos que la empresa los ha tolerado, eso no ayuda”.

(Se4): “Después de tanto tiempo en la empresa y tantos años en el mismo puesto puedo decir que yo trabajo de manera prácticamente autónoma en términos de supervisión. Mi jefe y yo nos conocemos bastante bien, hay mucha comunicación y confianza. Evidentemente él es mi jefe y siempre va dando seguimiento de mi trabajo, además intento mantenerlo siempre bien informado, tal vez ese es el secreto para que me de deje trabajar de forma bastante autónoma”.

Social Capital - Frienship

Social activities outside work seem to be a common pattern in both companies; also the relationship between colleagues seems to be good. Interviewed persons indicate that they have good relations with their colleagues and also they try to be present in extra work social activities, they understand that having extra work social activities could be good for their work. It is very interesting the fact that in this kind of sectors where technology is more important and it is commonly considered that social relationships are not very important, interviewees claim that they are interested in social activities and that this are really important for their job.

It is not unusual that professional relationships transform or grow into friendship. Thus at least confirm our interviewees. They say that some of their co-workers are their friends that they tend to hang out after the office hours. They go out to dinner or to concerts, and some of them go out to trip together. This out work bonding, one interviewee (Sf5) defines as a positive influence on work, while the other interviewee (Se1) labels it as a negative. It creates a certain commitment between two friends/co-workers. As the friendship loyalty is in stake, they make more effort to help each-other and avoid conflict that could jeopardize their relationship.

> **(Se1):** "Fuera también nos vemos. Nos hemos ido fuera de viaje mucha gente.... A eso me refería yo, que igual hay demasiada (confianza), muchas veces por no decir "no" a alguien, o no le dices "no" a alguien de hacer algo, porque precisamente tu sabes que te llevas muy bien y es tu amigo mucha como te ha dicho luego también como dicen "no" a alguien porque es tu amigo".
>
> **(Se1):** "Sí, pero también tiene su parte negativa. Que no le puedes decir... intentas no pelearte….Es un compromiso por amistad, no tanto porque que estas en una empresa, sino por la amistad; te quedas hasta tarde porque lo necesitas y ves que la persona lo necesita y que es tu amigo. Hay un grupo de 10 personas de las 40 que tiene la empresa. Unos 10-12 nos llevamos muy bien. Y el resto no significa que te lleves mal".
>
> **(Sf7):** "Yo vivo en Barcelona y la empresa está fuera de Barcelona, es difícil reunirnos. Hemos intentado muchas veces juntarnos y solo

funcionó un par de veces, es que una persona no puede, otra tampoco, hay diferentes planes. Tu cuando terminas el día estas cansado mentalmente. En mi caso después del trabajo me pongo a estudiar. A los compañeros del trabajo no los veo muy a menudo después del trabajo".

(Sf8): "bien, aunque en este mundo hay mucha gente rara. Pero bien. Con algunos me tomo cerveza algunas veces después de trabajo, normalmente los viernes o vamos en conciertos".

(Sf5): "con unos cuantos somos amigos y seguimos en contacto de hecho, nos vimos y nos vemos, seguimos viéndonos. Si, somos amigos. Y eso, creo que tiene una influencia positiva en el trabajo".

(Se2): " … pero sí, hay la cena, vamos todos, nos vamos a tomar unas copas y procuramos no hablar de trabajo".

(Se1): "Si, somos un grupo de gente, de personas de la empresa, de edad 40 o así, siempre quedamos y da igual el hecho que sea yo el jefe. No hay ningún problema".

(Se4): "Informal de manera general, es decir una relación bastante cercana entre todos, incluyendo a jefes. Si hay algún conflicto se intenta solucionar de manera profesional".

(Se4): (relación con compañeros y jefes) "Informal pero profesional".

(Se4): "Hay de todo. Con muchos compañeros tengo relación fuera del trabajo pero de manera esporádica, porque cada uno tiene sus actividades, familia, etc. Con otros solo hay relación profesional. En el caso de los jefes, con ninguno tengo relación digamos personal fuera del trabajo. Muchos jefes acostumbran organizar algunas comidas de fin de año, pero no todos y cada vez es menos común. Este año no tuvimos, por ejemplo".

Social Capital - Trust

Work environment seems to be of mutual trust between workers and employees. Objectives are given to workers and they have certain level of freedom to get them. Every person using their knowledge, the knowledge of the group and the support of their superiors must get their goals. It seems to be a big level of trust from superiors to workers. The fact that there be trust and

freedom for the workers seems reasonable in a sector where their knowledge is a key factor for the business.

The work in IT sector is often misinterpreted as a solitary work. But, working on the computer as a principal work tool, surprisingly, involves lots of communication. Sharing and exchanging information is based on trust. However, depending on the job position that one's occupies, it may vary: in one testimony (Sf8), we find evidence of mistrust towards superior; yet in the other (Sf5) it seems there is too much trust is not good either and it is perceived as abuse from the part of the employees. Trust and supervision of work are not noticed by everyone, and some of the interviewees seem to be confused in that respect. Thus, the interviewee (Se1) who has upper-level position in his company, at the beginning, claims that he is not being supervised, and after, he contradicts himself, saying that his work is controlled by other employees.

> **(Se1):** "Depende de cómo quien, pero en general se pueden comentar muchas cosas con casi todo el mundo. A veces algunas personas que no, pero en general 90% de la empresa, no hay ningún problema".

> **(Se1):** "no, realmente no tengo nadie que me supervise. Si un técnico me pide a mí que haga una serie de tablas para cruces etc., me pasa la información yo se la hago, y el la revisa…. Esta persona ve mi trabajo..para comprobar que realmente es correcto".

> **(Sf5):** "Bueno, había compañeros que se aprovechaban un poco de la situación, y hacían un poco lo que les daba la gana, yo creo que a veces hay que poner más como no digo barreras, pero dar demasiada confianza a las personas puede ser algo que luego se te vuelve en contra, en este caso en contra de mi jefe, porque la gente se aprovechaba un poco del hecho de que él nos daba tanta confianza, pero digamos que básicamente la cosa iba bastante bien. Esto de no tener una cosa demasiado formal iba bastante bien".

> **(Se4): "**Yo lo definiría de otra manera, no hay un nivel alto de desconfianza. No me mal interpretes, yo considero que un cierto nivel de desconfianza siempre existe, por eso las empresas supervisan a sus empleados a todos niveles, más aún, un cierto nivel de desconfianza es sano, pues como seres humanos podemos cometer errores y es bueno que de alguna manera se nos monitoree y ayude. Y en esta empresa se monitorea y ayuda, pero siento que no se agrede a la gente con acoso, al menos a mi no me ha tocado vivirlo".

> **(Se4):** "La respuesta a esta pregunta es siempre difícil (ríe). Porque como empleado siempre tenemos la sensación de que no nos valoran lo suficiente. Eso lo entendí cuando empecé a tener gente a mi cargo, entonces me di cuenta de que mi gente tiene una precepción muy diferente de su trabajo con respecto a la que yo tengo, por lo tanto asumo que algo similar pasará con mi trabajo respecto a la percepción de mi jefe. Respondiendo a tu pregunta, tenemos ciertos procesos de evaluación de desempeño y a través de ellos la empresa intenta que haya la mayor objetividad posible en las evaluaciones. Además, en mi caso, digamos que es más fácil evaluar a mi gente debido a que trabajamos con un sistema como JIRA, en el cual se registra prácticamente toda la información, tiempos, incidencias, propuestas, resultados obtenidos tras la programación, etc. Mientras más alto estés en el organigrama es más complicada la evaluación, ya que cuando gestionas gente, no puedes evaluar únicamente con base a indicadores, hay otros aspectos que se evalúan y son más subjetivos. Yo particularmente siento que el sistema de evaluación no es perfecto, pero tampoco malo, mejorable diría yo, pero no injusto".

Social Capital – Trust – Working from Work

As mentioned previously, trust represents and defines shape of work form. If there is mutual trust between co-workers, that includes friendship, it is more likely that their work ties will be more straighten and they will cooperate more intensively. The same with relation with their superiors; if there is a sentiment of trust, there will be more autonomy in work, and decision making. For example, various testimonies point out that working from their home is completely viable option for their type of work tasks. In the case of the interviewee (Sf6), exists that trust, and he can work from home. His chief is not worried that he will abuse that trust. The next interviewee, (Sf5) also confirms the existence of trust in his company, as it permits remote/working from home, but at the same time he criticizes some of his co-workers who abuse of that thrust. However, the most interesting testimony came from the interviewee (Se2) who claims that the roots of the existing mistrust, we must search in the Spanish entrepreneurial mentality.

> **(Sf6):** "Yo trabajo desde casa. Como tengo los servidores online, accedo a los servidores, me conecto y ya está. Como programar

puedes hacerlo desde cualquier lado, no es una cosa que tengas que estar en un sitio en concreto".

(Sf6): "Realmente el ir a la empresa como programador es un poco inútil, la única cosa es que los jefes siempre tienen el pensamiento de que estés en la empresa por el hecho de que no trabajes, más que nada por el control, pero si hay un plan de trabajo establecido indicando las tareas a realizar en determinado tiempo, es lo más rápido, porque realmente estás haciendo un control igual, el jefe no necesita estar detrás de ti…".

(Sf5): "Si, en mi caso era posible trabajar desde casa,… Si era posible sin ningún problema, lo que hiciera falta no había ningún problema…. Trabajar todo el mes desde casa no, esto no. … Yo creo que era algo más de mi jefe que prefería tenernos ahí, para podernos entre comillas vigilar, creo que era algo suyo, no se prefería que nos quedáramos en la oficina".

(Sf5): "Mira nosotros éramos de los pocos que teníamos el ordenador portátil, y también teníamos un sistema telefónico que nos permitía trabajar desde casa, porque iba todo por internet, al tener una conexión de internet podías trabajar desde cualquier lugar del mundo, no había ningún inconveniente.… Había gente que abusaba de su confianza sí. De hecho al comienzo él era más flexible en esto de trabajar desde casa, luego hubo gente que se aprovechó de esto y entonces fue cuando él dijo se acabó".

(Se2): "En España trabajar desde casa cuesta, porque la mentalidad del empresario Español es la que es, en cambio en otros países como Estados Unidos, Gran Bretaña, Francia, esa mentalidad está más abierta y lo que prima es el resultado".

(Se2) Oscar: "En España trabajar desde casa cuesta, porque la mentalidad del empresario Español es la que es, en cambio en otros países como Estados Unidos, Gran Bretaña, Francia, esa mentalidad está más abierta y lo que prima es el resultado. Yo creo que es un problema humano, porque la gente no se fía. Cuando hablas con cualquier compañero dice que en su casa es cuando más avanza y ese trabajo es más productivo. En esta empresa hay un chico que trabaja desde Cáceres y otro que trabaja desde Malta. A nivel general el empresario Español es reacio por miedo, por desconocimiento. En esta empresa este problema no existe. También te digo que poco a poco esos pensamientos negativos van desapareciendo. Trabajar desde casa va muy bien, pero a veces necesitas un sitio específico que tenga todas las herramientas. Llega un momento en que debes estar en la empresa por el tipo de instalaciones que requieres para trabajar. Lo erróneo es que no se mire el resultado más que como se llega al resultado".

Social capital – Investment ICT Vs. Human resources

For the work in IT and programming area are required skilled workers on one side, and the special type of equipment on the other side. By special equipment, it is usually understood the machines such as computers, servers, as well as licensed software, Internet, etc. The IT sector is very peculiar/specific sector, as it is highly changeable due to everyday innovation both at software and technical field. Thus, the companies in IT sector are practically obliged to follow that changing tendency by investing in the equipment and skilling their employees simultaneously. However, what it was noticed it the testimonies coming from our interviewees is that their companies are more disposed to invest into new, more powerful equipment, but are less interested to provide comparable investment (see salaries) in their staff. This misbalanced situation leads into discontent of the employees who decide to leave the company in the search of better economic recompense, and /or hiring new, less skilled workers, paid significantly less, as the company's response/ strategy to it.

> **(Se1):** "Si, pero nos falta la gente a veces (ríe). Pero no falta material. Nosotros que manejamos el material somos que tenemos el mejor material para el trabajo".
>
> **(Se1):** "Si, ahora de hecho ya te he dicho que estamos con ERE, lo que han intentado es quitar a mucha gente. Antes éramos 60, ahora somos 40. Han quitado 20 personas; prejubilaciones etc., pero si sí, lo que interesaba eran quitar esa gente más asalariada. Pero nunca les importado gastar dinero en lo que son ordenadores".
>
> **(Se1):** "No, lo que pasa que ahora digamos que se trabaja de otra manera. Es más sencillo trabajar ahora con el sistema que tenemos, entonces realmente a lo mejor necesitamos menos gente. Por ejemplo, en mi departamento éramos 5, pasamos a 4 y ahora somos 3. Pero estamos a tope".
>
> **(Se1:** "Cuesta mucho dinero y mucho tiempo formar una persona... y después que no se va. Nos ha pasado eso mucho; en 8 años ha pasado igual unos 10 personas".
>
> **(Sf8):** "yo diría que sí, tenemos unos laptops muy potentes. Es cierto que es el mejor laptop que hay hoy en día en el mercado, pero yo no lo necesito en absoluto para hacer mi trabajo…..La empresa siempre trae becarios que les pagan bastante más que en otras empresas".

Trainning

There is evidence that companies in this sector invest in courses and training for their people; however, in one of the two companies analyzed it is a common practice to give courses to the new people, interviewed works affirm that they had good training when they arrived to the company and that their company continuously train them and also pay courses to help their workers update their knowledge. Interviewees affirm that training is a key factor for this company because the specific software used and the specific characteristics of the products they sale, without the initial training new people won´t be able to do their job correctly.

In the second company, interviewees affirm that they also received initial training, however, they also affirm that this training was not good enough in order to training them to do his job, so at the end they have to read manuals and look for support and information in their colleagues with more experience, for them this is a key factor that let them to complete the knowledge they need to be efficient at work.

In IT companies, like at any company, after hiring a new employee, it starts with a initial training formation during which are usually presented global facts about the company on the on hand, and on the other specific procedures and objectives related to the new employee's work position. In many occasions, these trainings last few days, which in opinions of the interviewees is not enough, even though they provides the necessary, basic information. The interviewees point out that their companies organize special courses for continuous updating annually. Those courses are perceived positively by the majority of the interviewees.

> **(Sf6):** "La primera semana solo tuve una formación de dos días y luego cuando eran cosas muy puntuales preguntaba a la empresa asociada a la que le pagaban unas horas por capacitarme".

> **(Se1):** "Mira, ahora cuando nos cambiaron el sistema, …hicimos un curso para mejorar esto. Son cursos específicos….De vez en cuando sale cursos de inglés o de otras cosas que están aparte de lo que es tu trabajo. Los primeros se han de hacer obligatoriamente porque lo son de tu trabajo. O lo haces o no sabes trabajar. Ahora mismo se

está cambiando el sistema y se está mejorando una versión de un programa, y realmente se están dando eso cursos".

(Sf7): (en el curso que estoy haciendo ahora), aprendes mucho y bueno, ya que estoy trabajando diariamente con esto, pues inmediatamente lo pasas al trabajo, hay mucha información que la utilizas ya".

(Sf8): "tuve una gran variedad de formaciones, pero al final nada útil. Porque eso no es un trabajo que se puede aprender en un día... Los documentos/datos no del todo actualizados y al final acabas preguntando los compañeros con más experiencia y aprendiéndote tu solo en camino. En mi opinión, la formación no tuvo el nivel adecuado. Queda mucho espacio para la mejora. Esto sucede porque ellos los ven de manera que nos pagan para trabajar aquí y esta formación es un simple pro forma. Hay documentos que tu primero lees, luego hay esta formación donde alguien de ensena todas estas cosas (pero solo en teoría) y responde a tu preguntas, pero muy poca practica, casi nada. En principio, se considera que aprenderás mientras trabajas. Pero hay que tener en cuenta que nosotros aquí manejamos las informaciones muy complejas y eso no se aprende en un día, ni siquiera una semana. Para aprender igual hay 3, 4 cursos para que te lo ensenan una parte del trabajo y luego otro ...hasta llegar trabajar con esto un par de años para poder entender cómo funcionan todo esto".

(Sf5): "Si, a medida de que se introducían nuevos sistemas o cambios en el sistema, teníamos la formación para ponernos al día sobre estos cambios".

(Se3): "Esto fue en un grupo, que acababan de entrar 3 personas… tenemos una persona que se dedica a formación, normalmente a los partners, a los clientes y nos planificaron estos días la formación. Manuales sí que tenemos, acceso a manuales. Es algo normal que se consulte también diariamente porque el manual tiene miles de páginas, al final siempre tenemos acceso para asegurarnos que es así. Incluso hay cosas que no se tocan diariamente y al final, para saber".

(Se3): "Los cursos de actualización de software sueles hacerse anualmente. Es bastante constante … "algo sí que aportan porque pues da un poco visión de que se ha hecho esto y a veces también me entere de algunas cosas que pensaba que funcionaban de una manera y otro equipo lo cambió y al final también aprendí algo, que hay si lo cambiaron, para mi trabajo diario también tendré que tenerlo en cuenta, que esto ya cambió, que en otra situación encontraría el problema cuando iría a probar algo, no"?...".

(Se2): "Si, de hecho no hace mucho los compañeros de soporte estaban haciendo un cursillo de técnicas de implementación. Estaban haciendo un cursillo para que ellos gestionaran mejor la relación

cliente producto, para que tuvieran unas ideas más acordes a su trabajo, a su gestión".

(Se2): "… hasta no hace mucho estaba haciendo cursillos de inglés por parte de la empresa (en la hora de trabajo)".

(Se4): "Bueno, tengo muchos años trabajando en esta empresa y haciendo este trabajo, considero que si, que estoy bien capacitado. En tantos años, lo que no aprendes vía cursos (ya sea de la empresa o externos) lo vas aprendiendo con el trabajo diario. Además, mi trabajo involucra resolver problemas cada día y el mundo del software evoluciona muy rápido, con lo cual siempre estoy aprendiendo, buscando información en las redes, foros, etc., compartiendo información con colegas dentro y fuera de la empresa, etc. Esto es así"

(Se4): "Si, continuamente organiza cursos para nosotros. Anualmente los jefes de departamento se reunien con Recursos Humanos para planificar el calendario de cursos. Loa cursos se dan en horas de trabajo con lo cual es necesario planificar las horas y días en las cuales cada persona no estará disponible para el trabajo. La empresa también promueve y valora que la gente se prepare, de hecho uno de los factores que toman en cuanta para las promociones. La empresa si suele pagar cursos fuera para su gente, pero generalmente son para puestos altos y cursos cortos. Se que pagaron a uno de los directores un MBA pero entiendo que solo ha habido un caso".

(Se4): "El año pasado, fue un curso relacionado con gestión de grupos de trabajo. Nada especial, tampoco demasiado interesante, pero bien. Cursos relativos a Software o aplicaciones no tenido nada en los últimos años ya que no hemos hecho grandes cambios en cuanto a software y los pequeños cambios los vamos aprendiendo con la práctica, foros, etc., digamos que a eso estamos acostumbrados, es nuestro día a día".

Trainning – Knowledge Transfer

A common factor in both companies analyzed is the importance that they give to initial training for new people. Almost all people interviewed affirm that they received what they consider a good enough initial training, which includes the use of the information systems of the company, plus the knowledge of the internal processes of the business. It seems that in this sector companies understand the importance of internal processes and also the important it is that their workers had a good mastering of information systems use. Another

important element is that people affirm that in many cases training does not give them all knowledge needed for their daily work, but they also affirm that using that initial knowledge they receive, they are able to learn by themselves.
We can identify two different modalities for teaching new workers, the first consist in giving them a formal training in small groups for several days. The second one consists in what we can call “co-working” which is the training given to a new worker by an experienced worker of the company, they work together for a few days until the new worker acquire certain degree of mastering of the processes, use of information systems, and generally speaking of work.

For this sector it is very clear that companies invest in training for their people. Besides of the initial training for new workers, some companies encourage a transfer of “how-to” knowledge from veteran to newcomer employees. As the interviewees indicated, the initial trainings are not always enough to confront daily tasks. Thus they reach out to the traditional technique of apprenticeship. This technique involves on the one side an experienced worker who possess the expertise on the specific matter, and an apprentice who is getting familiarized with his/her new work assignment, and lack many information necessary for its execution. Ones the newcomer integrates sufficient amount information, he/she became more autonomous in his/her work. However, the interviewees say that it is common to consult their co-workers, in case that they have some doubts. They also affirm that they reached a certain level of independency, meaning that they know where they can search new information and are able to function on their own.

> **(Se1):** “El primer curso que hicimos cuando cambiaron el sistema de una empresa a otra, vinieron 4-5 días ensenándonos todo. También es un curso que tú ya sabes de qué va, con lo cual, mucho más sencillo.
>
> **(Sf5):** “Estuve en “sharing”, yo me sentaba al lado de cada compañero y cada compañero me enseñaba lo que hacía. Los primeros días tuve a un compañero que me dio la formación, me enseñó cómo se utilizaba el sistema, …,luego iba sentándome con cada compañero para ver como trabajaba cada uno de ellos y claro desde cada persona podía aprender algo nuevo…., tuve una buena formación creo. … al cabo de un mes ya estaba casi totalmente autónomo”.

(Se3): “Al entrar tuve, si no me equivoco 4 días enteros, por la mañana y por la tarde, unas 30 horas seguro de formación un poco de producto, cómo va la empresa y luego también, más o menos cada año hacemos una semana de presentaciones .Esto sí que se puede decir que nos forman un poco para esto”.

(Se3): “Es una formación en que se muestra un poco lo que se puede hacer con el software que hacemos, también podemos probar varias cosas nosotros, está bien porque éramos un grupo pequeño de tres personas que teníamos buen contacto con la persona que nos daba la formación, nos explicaba, además es una persona que se dedica a eso diariamente, conoce bien el producto y yo diría que sí, que está bien, lo que pasa es que al final uno no se acuerda de todo después de esta formación. Es mucha información pero por lo menos nos queda una idea”.

(Se2): “Tienes personas especializadas en cada módulo que te explican cómo funciona su módulo y después tienes toda la información relacionada a ese modulo para que tú después la puedas consultar o estudiar o analizar de alguna de las maneras, siempre teniendo en cuenta que si se produce alguna duda, pues puedes hablar directamente con la persona que ha llevado esa parte del proyecto y por lo tanto es el mejor conocedor de cualquier duda relacionada con el mismo”.

(Se2) : La respuesta a esta pregunta es siempre difícil (ríe). Porque como empleado siempre tenemos la sensación de que no nos valoran lo suficiente. Eso lo entendí cuando empecé a tener gente a mi cargo, entonces me di cuenta de que mi gente tiene una precepción muy diferente de su trabajo con respecto a la que yo tengo, por lo tanto asumo que algo similar pasará con mi trabajo respecto a la percepción de mi jefe. Respondiendo a tu pregunta, tenemos ciertos procesos de evaluación de desempeño y a través de ellos la empresa intenta que haya la mayor objetividad posible en las evaluaciones. Además. en mi caso, digamos que es más fácil evaluar a mi gente debido a que trabajamos con un sistema como JIRA, en el cual se registra prácticamente toda la información, tiempos, incidencias, propuestas, resultados obtenidos tras la programación, etc. Mientras más alto estés en el organigrama es más complicada la evaluación, ya que cuando gestionas gente, no puedes evaluar únicamente con base a indicadores, hay otros aspectos que se evalúan y son más subjetivos. Yo particularmente siento que el sistema de evaluación no es perfecto, pero tampoco malo, mejorable diría yo, pero no injusto.

(Se4) : “El negocio del software está basado en el conocimiento, lo que mi equipo produce es conocimiento (know how), software, procesos eficientes para que los ordenadores hagan el trabajo. En este contexto, lo más importante es el conocimiento y por supuesto las buenas ideas son bienvenidas. Como coordinador de software una parte importante de mi trabajo es detectar esas buenas ideas, motivar al equipo para que tenga más y mejores ideas y por supuesto

ponerlas en marcha. En mi equipo sí que se escuchan, discuten y valoran las buenas ideas. A nivel empresa por lo general es así, la tendencia general es esa, luego depende ya de cada jefe y de cada departamento, pero yo diría que en esta parte la empresa valora positivamente que aportes nuevas ideas. Tal vez lo no se reconozca de manera especial a la gente, pero es parte del trabajo diario y la mayor parte de las veces esas nuevas ideas se reflejan en tu trabajo. Siempre hay riesgo de que te roben las ideas, pero para eso estamos los jefes".

(Se4) : "Como te comentaba, el negocio de esta empresa es el conocimiento por lo cual es muy importante para nosotros tener una forma eficiente de guardarlo. En nuestro caso una herramienta muy importante para nosotros es JIRA porque esta herramienta nos permite guardar toda la información que se va produciendo durante el proceso de programación. Si, todas las reuniones que tenemos estan documentadas, es una práctica común y solicitada por la empresa. Las minutas son posteriormente enviadas vía correo electrónico a todos los involuctados, además la persona organizadora de la reunión debe archivar la minuta en nuestro base de datos. Por último siempre queda información en el correo electrónico, es verdad que esta información queda dispersa en los correos de los involucrados, pero es una posibilidad que existe para no perder la información. Considero que nosotros documentamos bastante más que otras empresas. Como comente anteriormente, vivimos del conocimiento y hay que guardarlo".

Knowledge

Knowlwdge – Learning

A common characteristic of the companies analysed is that they hire people with medium-high qualification level (bachelor or master's degrees). Almost all of people Interviewed consider that an important part of their work is related to learning, which includes talking to people, analyse problems, use the knowledge acquired through internal company courses, manuals, the use the knowledge acquired by data bases or another medium as internet. People understand that it is not possible to know everything and that they should be creative and capable to learn and solve problems by themselves or by teamwork. Also, there is evidence of knowledge sharing between colleagues. People seem to understand the importance of teamwork and knowledge sharing

and they are open to help each other and cooperate. According to the data recollected, team work and knowledge sharing is a key element for this sector.

It has been mentioned in prior paragraphs the importance of the specific workforce profile characteristic for the IT sector. It comprehends medium to high level qualified individual in the area of informatics of telecommunications above all, although it is not a rule. In rare occasion, it occurs that the person is autodidact, and possesses more expertise in a particular matter/area, compared to other that has an official credentials/ qualification. The process of acquisition and creating new information is inherited to programming. Permanent learning from different sources, which includes specific guides, manuals, databases, Internet (see Google search, specific forums, chats room, etc.), as well as formal or informal sharing and exchanging of information with co-workers, and homologues from the other companies as well, is seen as a creative process that may lead to problem solution, improvement of the existing process/es or even to innovation. The flow of information is actually flow of knowledge, which in almost all cases includes more than one person, meaning that cooperation and collaboration are the key elements in that process.

> **(Sf6):** "Yo he hecho grado medio, grado superior, en grado superior aprendí a programar y luego es espabilarse".
>
> **(Sf7):** "La última vez hace dos meses fuimos al UK para hablar con la gente, para ver su trabajo diario para fijarnos, a ver, que podemos mejorar, como lo hacéis, como podemos mejorar el sistema para que las personas que meten los datos no se equivoquen, o para que no facturamos a un proveedor que no toca".
>
> **(Sf7):** "Tenemos manuales y tenemos "User Guides", procedimiento, está en papel. Tenemos un parte que se llama "solutions" y ahí si te sale un error, tienes como un procedimiento".
>
> **(Sf5):** "Tuve máxima disponibilidad por parte de todos, me formaron muy bien, vi mucha disponibilidad, y podía preguntar todo el rato, cuando tenía dudas siempre iba preguntando y todo el mundo me contestaba, en seguida me explicaban".
>
> **(Sf5):** "Si me ha pasado cuando tenía preguntas muy específicas, preguntas técnicas, me preguntaban cosas que yo decía, pero que

me está preguntando este, entonces, para yo poder enviar la requisición al equipo técnico debía entender primero que están preguntando, y entonces sí que me metía en google y buscaba un poco, antes de elaborar la petición al departamento técnico, esto de google te diría que lo utilizaba 10% del tiempo, es para preguntas técnicas, porque el resto de las cosas y otras preguntas tenemos una intranet, la red de la empresa con toda la información".

(Se3): "Más o menos me ayudo la formación lo que pase es que la formación fue de todo el producto, de varios módulos, explica un poco de todo y eso da una vista más amplia, yo creo que va bien para poder comprender como funciona el tema, pero luego siempre hay que profundizar, cuando tuve que implementar algo, pues lo mejor es muchas veces arrancar, probarlo, ver cómo funciona, mirar un poco el manual si hace falta".

(Se3): "Ahora ya me ubico más, si alguien dice se hace esto, más o menos ya me ubico más. Eso es ya con el tiempo, pero es que los primeros días son difíciles, la base de datos es muy amplia, un montón de tablas, cada tabla un montón de campos y pues ahora ya más o menos ya sé donde se tiene que guardar y el conocimiento del producto también es importante".

(Se3): "Ya soy más independiente, tengo que consultar otras cosas, antes tenía más problemas. Ahora ya voy más directo. Ahora lo que consultamos es más como lo veo, normalmente. Ahora consulto otras cosas. Cuando entré no conocía bien el producto y tenía bastantes dudad de funcionamiento de todo el pack".

(Se2): "La capacitación para la herramienta específica es más que necesaria, en el caso de esta empresa. Pero a partir de ahí, ya son dos conocimiento, es decir, tú tienes que adaptar tus conocimientos para que esa herramienta específica la puedas englobar en un entorno más amplio, y eso ya eres tú y tu conocimiento, lo que tú ya sepas, lo que hayas aprendido ó hayas vivido".

(Se2): "Años atrás con revistas especializadas. Mira, hoy en día casi toda la información que quieras la vas a encontrar online".

Knowledge - Innovation

Companies in software sector use to work with the creation of new knowledge in the form of software, brand new products or services. Innovation understood as the creation of something new that is sold to the clients present in companies of this sector, in fact as it is a sector of high levels of competence and whose objective is to help other organizations to evolve and be more productive, it can be said that innovation is in the heart of companies in the software sector, because their goal is to create new and more efficient code to help other companies (clients) to improve their process using information technology.

> **(Sf6):** "Sí, porque al trabajar para clientes externos prácticamente todo lo que se nos pedía se hacía nuevo".
>
> **(Sf7):** "Hay diferentes niveles yo estoy entre nivel 2 y nivel tres de SAP. El nivel 3 se dedica a los proyectos, pues es la mejora continua, dependiendo de las necesidades del negocio pues desarrollamos programas o el proceso".

Knowledge storage

As the software sector relies on intangible assets like knowledge, for them it is extremely important to save the new knowledge created in the company that is why we detect in the interviews that all of the company analyzed have specific procedures, tools and databases dedicated to store knowledge.

This companies use to document almost all work done by the workers, some of them practically document work every day. The use of information systems is a very important part of documentation because of two reasons.

The first reason is that almost all information systems and organizational software they have; IS must be fed with data in order to be maintained updated. It means that to manage process and do their job people must not only get data and information from the system, but also to introduce data in the system, in this way management information systems work also as repositories of information or places to storage knowledge.

The second reason is that many companies in the software sector use specific information systems that let them to document any change done in the code (software) they produce. This special software is used for programmers to describe the changes they have done and let the company to trace in the future the origin of any possible problem or need they could have. It could be say that in the software sector storage of knowledge is a common practice.

It has been detected that in the IT companies every work movement is documented, in some cases codified, and saved. The interviewees explained that their companies' policies impose this procedure, and for that purpose use different information systems in order to record all the information produced by their employees. They use specific software and databases which are feed by the same workers in a real time. There are security copies as well; sometime saved on the local server, and more recently on private cloud. Saving all that data is important for the company as it represents intangible asset of the company. In that way, the company protects its information, which in this sector equal to money. Very often, they patent their achievements, preventing thus illegal copying of its products. That is a reason way sometimes there are different level of clearance inside one company. It is not allowed the access to all employees to all information, as it is considered as industrial secret and only authorized (see the highest levelled employees) have the access to sensitive information. But, the main reason for saving all the information may lie on the fact that the companies want to stop loosing the knowledge/information produced when employees leave the company or retire. There are lot of evidence in the literature of the last.

> **(Sf6):** "Siempre se tiene guardada toda la información necesaria en copias de seguridad".
>
> **(Se1):** "Toda la información queda guardada. Por la ley de protección de datos, lo que se hace es quitar la información que relaciona las respuestas con persona. Pero toda la información se queda guardada".
>
> (Sf7): "A esto me dedico a desarrollo, y todo los problemas relacionados con el flujo de documentos, flujo del proceso los estamos resolviendo trabajo en un departamento en el que hay… como 60 personas que mantienen el sistema".

(Sf8): “toda la información se guarda para posterior uso. El acceso a la información es fácil, pero hay muchísima información”.

(Sf5): “Se guardaba todo, si, a la mayoría de las cosas si tenía acceso, a veces había información confidencial y tenía que preguntar a mis jefes para ver si podía tener esta información, ellos averiguaban y me decían, porque necesitas saber esta información, quien te ha preguntado, porque había secretos industriales, y una vez averiguado esto, me decían, vale la información es esta o no podemos proporcionarte esta información, pero digamos que un 90% de la información, sí que tenía acceso”.

(Sf5): “Tú dices la misma pregunta a lo mejor, al cabo de un año de parte de otro cliente, si esto si me ha pasado y he ten ido que volver a google, pero también tengo buena memoria y como guardaba todos los emails enviados, me iba a los emails enviados, pero básicamente lo que tenía que hacer era regresar y buscar en google”.

(Sf5): “Bueno lo que ha pasado es que se ha marchado gente durante estos años y claro se ha marchado con sus conocimientos sobre los clientes, por ejemplo,…Pero lo que se intentaba hacer, es pasar la información a las personas que iban a tomar el relevo. Pero si diría que si, como se han marchado las personas también se ha marchado la información, parte de la información la hemos perdido, creo que es algo normal que pasa en todos los sitios”.

(Se3): “Estamos más concentrados en el trabajo o cada uno hace su cosa, por ejemplo se documenta más también todo, igual es porque es otro tipo de trabajo. Todo tenemos más documentado, tenemos que seguir unas reglas, para que todo vaya bastante bien”.

(Se3): “Se está guardando, cada funcionalidad tiene un documento de análisis, esta descrito con introducción, que se va a hacer, luego hay un análisis funcional con captura de pantalla, que esto se queda, es un documento mío, lo creo yo, esto luego también la gente de documentación lo va a leer y lo pondrá en documentación. Este documento funciona para que otros sepan que se implementó”.

(Se3): “Lo que una persona implementa ya se queda documentado…de momento se guarda desde hace muchos años y si alguien tiene una duda, pues ya se regresa a un documento anterior en el cual está marcado quién lo ha creado, quién fue responsable de la funcionalidad y… todo está guardado, documentado quién hizo la documentación, eso también consta siempre en este programa de seguimiento”.

(Se2): “Aquí si que se dispone de unas herramientas para plasmar en todo momento los cambios que se hacen y porque se hacen. Es decir, una versión nueva de producto, el feedback de clientes y proveedores, etc.… Todo se guarda y el director de I+D cuando lo

considera oportuno dice lo que hay que hacer, y todo eso se documenta, siempre que se hace una modificación queda documentada y esa documentación…”.

Use of Information and communication technologies

As it was expected, the use of Information and communication technologies in this sector is very high and also very important. In fact, it is in the heart of the business. ICT is the reason why any company of the software sector exists. Nowadays, almost any business could exist without the use of ICT.

As interviewed people indicate, information tools are extremely necessary for their daily work, and the mastering of those systems is a key element to let them be efficient in their work. That is why training, practice and the support of colleagues play an important role in workers daily job. The most used ICT tools are, as it could be expected the email, which let them to interchange information with almost everybody and as mentioned by them it is a way of communication less aggressive, because email let the people read the message and answer it whenever is better for them. Also, another advantage they consider email has, is the fact that it is an excellent way to has evidence of the information shared and it is very easy to keep (save).

Accordingly to our interviewees, the most common way of communication in IT sector is by email and Skype. Email is used as more 'official' channel and has certain limits compared to Skype which includes different modes of communication, such as chat (text messaging), voice call, video call, conference call, share screen, etc. the importance of the last lies in the fact that it is instantaneous, interactive and response to it is more rapid. Besides that these methods of communication are less expensive, which off course plays an important feature for the companies, they are perceived as handy and comfortable tools for exchanging information as well. Another curiosity of this sector is a use of free operative system based on Linux. Linux is OS that is more popular in IT community than in the general population. It is less user-friendly although is less limited for programming and is safer when it comes to program viruses and cyber attacks. Nevertheless, some of interviewees use Windows OS at the work and find it visually more attractive. What stands out in one part of the obtained testimonies is that when it is possible, the interviewees

prefer face-to face communication. Human contact and interactions with co-workers is the most valuable even in this type of sector.

> **(Sf6):** "Básicamente dos cosas: correo y Skype. Son dos cosas muy necesarias. Ya sea para comunicarte con una persona o con otra, siempre necesitas esas dos cosas, todo lo demás inútil. El teléfono casi no se usa. Es mucho más cómodo tenerlo todo centralizado por Skype. Yo utilizo plataforma Linux, aunque la mayoría de clientes usan Windows. Linux es más seguro, Windows es más visual".
>
> **(Sf6):** "Ordenador y diversas aplicaciones tales como Notepad, Dreamweaver, software de diseño, según el momento".
>
> **(Sf6):** "Notepad, Dreamweaver, Netbins, Photoshop, Word, office en general, Skype".
>
> (Se1): "Mail y el teléfono. Alguna vez videoconferencia, pero básicamente es mail y teléfono. Pero prefiero si es posible, cara a cara".
>
> **(Sf7):** "…toda la información está en los ordenadores y está controlado por SAP".
>
> **(Sf7):** "Tal como antes te he dicho, tenemos varios niveles. El primer nivel es como la gente que coge los teléfonos y mete la información en el sistema, puede ser que utilice SAP o no".
>
> **(Sf8):** "Yo trabajo en Linux, me conecto automáticamente en el túnel y hago todo remoto. Y como eso es Linux, pues no tiene nada visual".
>
> **(Sf5):** "Utilizábamos sistema Microsoft (office, Word, Excel, etc.). Había unos módulos creados para la empresa, que utilizábamos para comunicarnos por ejemplo con el departamento de logística, o con el departamento de precios, módulos que teníamos que rellenar con toda la información, luego, enviar al departamento y ellos nos contestaban utilizando este mismo módulo de respuesta. Estos módulos eran creados por medio de Microsoft, no me acuerdo el programa pero era algo específico para esta empresa. Además utilizaba SAP, Office, el correo Outlook, el chat que era de Microsoft también".
>
> **(Se2):** "Cuando llegas a la empresa te dan unas credenciales en cuanto a usuarios se refiere y esas credenciales te dan acceso a todas las herramientas que necesitas para poder hacer tu trabajo, claro".

4.3.7 Interpretation and analysis of the empirical

Social capital Conclusion

The companies behave like societies. The first take the local culture and mentality features and modify them so that they fit according its needs. It is also true that the employees influence the organisational culture of the companies. The influence is mutual and flow in both directions. The social component is very important for the functioning of one company. Through the net of social contacts one arrived to be hired or promoted. Or else, close contact with the fellow colleagues will permit more fluid communication and collaboration. In time of excessive work, the colleagues are there to help out, as well as there is doubt how to proceed with some task. Social component shape the work environment, creating pleasant working climate that help reducing stress in time of excessive work or tensions of other type. Making social ties within the company allow the transfer of work experience and knowledge from the senior employees to younger employees. Although much of the information can be save in some form, there are certain details that cannot be described by words, and therefore saved in companies´ files. That is why it is so important to nourish the spirit of collaboration and promote transmitting the work experience, especially of those employees who soon are be retired.

Knowledge conclusion

In the **section** of knowledge are analysed the variables trough which new skills and information are achieved. In this sense, the initial trainings represent the first step with which each company pretend to give a new employee all the necessary tools for his or her future work. However, from the obtained data, it cannot be confirmed that the two companies that participated in the study are doing well. Their initial courses, as well as updating courses and trainings obtained negative qualification from their employees. They did not provided to the employees the adequate level of knowledge required to accomplish certain tasks, causing them frustration and necessity to continuously search the assistance of other employees. One other overlook by the companies in reference to knowledge was observed: a lack of prevision of time necessary of

assimilating the new skills. It has been proven that it is not instantaneous, and that it requires a period of assimilation. The interviewed employees confirmed this thesis. The storing of information seems to convert into obsession in some companies. They save all type of information and data, even if they know or need them. The latest hit is cloud storing at rented virtual server. The interviewees corroborate it, explaining the procedures they use to save the information. It should be acknowledge that there is lot of valuable information stored in companies´ databases, but it should be also mentioned that sometime there is excessiveness of information that leads to saturation of information, and to chaos.

ICT final conslusion

The progress in the field of ICT in the last decade is more that evident, and it is accelerating. It changes not only the way of work, but our mode of life as well. There are hardly any parts in the world which still are not connected in the giant net of World Wide Web. We, as individual are adapting to this new reality, but the companies as well. The ICT enormous potential faculties the work, reducing the time necessary for realisation of work tasks, saving the entrepreneur time and money invested. It saving the money, as the machines or computers are able to do faster, more precise or more efficient the work. Besides, although they need adequate maintenance, they do not have vacations, or get sick, and that is why businessmen prefer to invest in them that to human resources. For the moment, the human race is still controlling the machines and computers, but with the appearance of artificial intelligence (AI) which is gaining the terrain every day, it is not clear that we could keep the rhythm. Out physiological capacity are limited, and AI has potentially unlimited capacity to learn, understand and apply stored knowledge. Fortunately, today we are still in charge of the technology, so we need to know how to use it properly, in out benefit, and create an additional value with it.

5. FINAL CONCLUSION

This section consists of two parts. In the first part are presented definite conclusions on the matter of five proposed hypotheses, based on the empirical findings of the three case studies from the previous chapter. In the second part are presented final conclusions of this research study. The purpose of this specific study was never to conduct a comparative study. Accordingly, in this section, it is analyzed all the information obtained from all three case studies, as a whole. The main objective of this study is to arrive to a common conclusion.

From the results related to the first proposition: has social capital a significant effect, on the “knowledge creation process”? We could observe that in all companies analyzed there is evidence that supports the fact that as more social capital people has, the transmision of information and knowledge gets positively affected. People in all sectors refers to social contacts as an important source of information and knowledge, in fact, in almost all organizations workers tend to rely on social capital to get information related to their work. It seems that information and knowledge flows in a much better way. Also, evidence says that the “combnation” process of knowledge creation is the most benefited from the high socialization and social capital in groups. It is also clear that as more education and knowledge has people in the organization tends to rely less in social capital to get information and knowledge. This is very evident comparing software sector with health sector.

From the results related to the second proposition: Has the “knowledge creation process” a positive effect on social capital? It can be concluded that there is no enough evidence to support this proposition. It seems that even when the fourth processes of knowledge creation can be detected in the organization (socialization, externalization, combination and internalization), as it is the case of the software sector, these processes do not necessarily improve social capital, because in most of the cases this are formal processes that do not promote or improve the socialization and do not help to develop social capital. As we can see in the literature, it is suggested that knowledge creation helps the improvement of social capital; however, more research is needed to prove it.

From the results related to the third proposition: Has the “social capital-knowledge creation process” system a positive effect on the variable (“perceived usefulness”)? According to the analysis of the interviews, we can affirm that the synergy created between the two variables (social capital and knowledge creation process) have a

positive impact on the perceived usefulness of the information and communication technologies used by people. It is noticeably clear in all sectors and organizations analysed, that people tend to use their social capital to access to information related to the use of the information systems. Also, it is clear that the social interaction plus the need that people have for information and knowledge that help them to quickly solve their problems (related to the use of information and communication technologies), causes that the knowledge creation process (socialization, externalization, combination, internalization) be enhanced resulting in greater knowledge creation and more shared information. The consequence of this is that people acquire more knowledge concerning the use of ICT tools and therefore their perception of usefulness respect to the ICT tools increases.

From the results related to the fourth proposition: Has the “social capital-Knowledge creation process” system a positive effect on the variable “perceived ease of use”? As in proposition three, there is evidence that “social capital-Knowledge creation process” system, is helpful to increase the perceived ease of use that people has in respect to the ICT tools used.

From the results related to the fifth proposition: Has the “social capital-Knowledge creation process” system a positive effect on the variable “User satisfaction”? In this case, there are two different lines of evidence. On one hand, there is people that instead of increasing their level of user satisfaction when they have to go to unofficial sources to acquire information and knowledge regarding the use of ICT, they consider that the organization is not giving them the correct support to use ICT tools, and they also consider that their level of work is very much increased because of this. They argue that the organization does not gives them the correct support and knowledge concerning the use of ICT and neither gives them time to learn, which increase their workload and level of stress. Besides, this people tend to overvalue official training. On the other hand, there is people that undervalues official training given to employees to use information and communication technologies and consider that they learn faster and better using the method “learning by doing”. This results may also be associated to the quality of the social capital in the organization and the organizational culture.

PROPOSITIONS FOR FUTURE RESEARCH

After finishing this research there were detected several future research lines.

First, as the relation between Information and Communication Technology and Social Capital seems to be important in order to improve the use of the systems, as this research was very limited in terms of access to a big sample, it is recommendable to increase the size of the sample.

Second, It is clear from this research that some variables change a lot between sectors, while others seems to have almost the same results, in order to verify the impact of every variable, it is proposed to extend this research to other sectors. Interesting sectors to be analysed would be education, banking, transport, etc.

Third, given the results of this research, it would be recommendable to do a research field study where the researcher is inside the organization and is able to analyse in a deeper way the interaction between different actors in the network and do deep interviews (ethnographic method).

Fourth, It is recommendable to do a very extensive case study in the area of health. Results seem to suggest that health is a sector with great potential in terms of the benefits that could be obtained from the use of Information and Communication Technologies; also, it seems to be a sector in which social interaction plays an especially important role.

Fifth, it would be recommendable to repeat this study in organization that clearly claim to be working with the knowledge creation process (particularly SECI model of Nonaka).

Sixth, another good area for further research would be to repeat this research in Micro-business as well as in big companies, in order to be able to compare the results.

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APPENDICES

Appendices consist of three major parts:

Appendix A - Includes final interview guide in Spanish

Appendix B - The second part includes a summary of characteristics of study participants interviewed for this research

Appendix C – It shows the research questions and his relationship to the research variables included in the research model.

Appendix D – Includes some tables used in the analysis of the pilot interviews throught through the BNML method.

Appendix A: Interview guide

Guión de entrevista

I. INFORMACIÓN GENERAL

- Edad
- Sexo
- Estudios
- ¿A qué se dedica su empresa?
- Puesto de trabajo
- Descripción del trabajo.
- ¿Cuánto tiempo lleva en el puesto actual, en el departamento? ¿Ha cambiado puesto de trabajo desde q trabaja en esta empresa?
- ¿Tiene experiencia previa en este sector? ¿Trabajaba en alguna empresa parecida?

II. SOCIAL CAPITAL

1.- ¿Qué opina sobre el ambiente / clima laboral de su empresa?, Respecto al ambiente de trabajo, ¿cómo es?: Relajado, informal o más bien formal/seco, ¿incluye códigos estrictos?

2.-¿Su trabajo es solitario o involucra otras personas?

3.- ¿Diría que es un trabajo de equipo?

4.- ¿Puede describirme la relación que tiene con sus colegas en el trabajo?

5.- ¿Tiene una relación estrictamente profesional con sus colegas y jefes?, es decir solo en el trabajo, ¿o también fuera del trabajo?, ¿los consideran amigos?

6.- ¿Se siente unido con los demás empleados de su departamento? ¿Tiene contacto con otros departamentos?

7.- ¿Puede describirme la relación que tiene con sus superiores/jefes?

8.- ¿Hay confianza?, ¿Es reciproca?

9.- ¿Que me puede decir sobre los valores que promueve su institución/empresa?: cooperación, colaboración, ayuda, trabajo en equipo, existen personal que sobresalen, líderes, etc.

10.- ¿Cree que tener buenas relaciones con sus compañeros le ayuda o no, a realizar mejor su trabajo u obtener mejores resultados?

III. KNOWLEDGE CREATION PROCESS

11.- ¿Cuándo empezó a trabajar en esta empresa, recibió algún curso de capacitación?, ¿de qué tipo?, ¿duración?, ¿fue útil?. Si no le fue útil, ¿cómo aprendió el trabajo? (autodidacta, espabilándose; por manuales, apoyo de compañeros, jefes,…

12.- ¿Cree que esta adecuadamente capacitado para el trabajo que está ejerciendo?, ¿O no demasiado?

13.- ¿Se promueven las reuniones que tienen el objetivo de compartir: experiencia, conocimientos, resolver problemas?, ¿Le parecen útiles?

14.- ¿Sus jefes / sus superiores reconocen sus meritos?

15.- En general, ¿las buenas ideas y propuestas se premian?, ¿se valora su iniciativa?, ¿se toman en cuenta sus propuestas?

16.- ¿Diría usted que su empresa genera conocimiento y/o información? Si- ¿cree que este conocimiento queda documentado?, ¿se guarda?

17.- ¿Cómo trabaja?, ¿de manera autónoma o bajo supervisión?

18.- ¿Tiene todo el material necesario para su trabajo diario?, ¿ocurre que algunas veces algo falta?, por ejemplo, ¿tiene acceso a bases de datos en internet para buscar la información que necesita?

19.- ¿su empresa promueve cursos, formación, reciclajes?

20.- ¿Puede decirme cuando tuvo la última formación? Fue una experiencia positiva o negativa?

21.- Si la formación (formal por parte de la empresa), no tuvo lugar, ¿por qué razones?: económicas (la empresa no quiere invertir en capacitación), la empresa no considera valiosa la formación, porque la formación no se lleva a cabo en el tiempo de trabajo, porque no le interesa a usted, etc.

22.- ¿Cuales son los principales medios que utiliza para comunicarse y compartir información con sus colegas de trabajo?

IV. INFORMATION AND COMMUNICATION TECHNOLOGY

23.- ¿Qué herramientas informáticas utiliza en su trabajo diario?. Por favor, nombre 5.

24.- ¿Qué tan útiles son para su trabajo? (en la escala Likert). Luego, explicar la razón de su respuesta., El ¿por qué?

25.- ¿Cual es su nivel de satisfacción respecto al uso de esta herramienta?

Appendix B: Summary of characteristics of study participants

Inscription codes for interviews:

- **Sector:** H - Health F - Food S - Software
- **Enterprise:** a, b, c, d, e, f
- **Interviewed per sector**: 1, 2, 3, 4, 5, 6, 7, 8

Ejemplo:

Interviewed code Se2 => Sector **"Software" ;** Enterprise **"e" ;** Interviwed **"2"**

Table 10 Characteristics of study participants and status of interviews

Health								
INTERV. CODE	AGE	GENDER	STUDIES	POSITION	LEVEL	TIME IN WORK (Yr)	EXPERIENCE (Yr)	INTERVIEW DURATION (mins)
Ha1	45	female	technicien	nurse	Medium	11	20	43
Ha2	38	female	technicien	therapists	low	10	8	39
Ha3	28	male	technicien	Staff	low	3	5	29
Ha4	38	female	technicien	nurse	low	10	15	45
Hb5	55	female	technicien	Administ	Low	10	15	40
Hb6	55	Female	technicien	Administ	Low	6	18	35
Hb7	25	Male	technicien	Administ	Medium	1	1	38
Hb8	44	Male	High	Director	High	6	20	58
Food								
INTERV. CODE	AGE	GENDER	STUDIES	POSITION	LEVEL	TIME IN WORK (Yr)	EXPERIENCE (Yr)	INTERVIEW DURATION (mins)
Fc1	55	Femle	Medium	Director	High	12	20	37
Fc2	34	Female	Medium	Administ	Medium	3,5	3	49
Fc3	28	Femle	Low	Administ	Low	2	5	26
Fc4	37	Male	High	Administ	High	3	10	43
Fd5	44	Male	High	Administ	Medium	5	10	45
Fd6	46	Male	High	Administ	Medium	15	20	60
Fd7	26	Male	High	Administ	Medium	2	2	35
Fd8	46	Male	High	Director	High	15	20	50
Software								
INTERV. CODE	AGE	GENDER	STUDIES	POSITION	LEVEL	TIME IN WORK (Yr)	EXPERIENCE (Yr)	INTERVIEW DURATION (mins)
Se1	43	male	engineer	manager	med	15	18	50
Se2	35	male	master	manager	med	5	10	50
Se3	39	male	engineer	J. programmer	med	3	10	75
Se4	38	male	master	Analist	High	**2**	15	45
Sf5	40	male	Licenciado	Administ	Med	4	10	65
Sf6	26	female	engineer	J. programmer	low	1	1	27
Sf7	46	male	master	manager	med	20	22	35
Sf8	45	male	master	Manager	High	10	20	65

Appendix C : Research questions and research variables

Table 10 Relation between Research Questions and Research Variables

	SOCIAL CAPITAL			KNOWLEDGE CREATION PROCESS				ICT	
QUESTION	STRUCTURAL DIMENSION	RELATIONAL DIMENSION	COGNITIVE DIMENSION	SOCIAL	EXTERNAL	COMBINAT	INTERNAL	PERCEIVED USEFULNESS	USER SATISFACTION
1	X	X	X	X	X				
2	X		X	X	X	X			
3	X	X	X	X	X	X			
4	X	X	X	X	X	X	X		
5	X	X	X	X					
6	X	X	X	X					
7	X	X	X	X					
8	X	X	X	X					
9	X	X	X	X	X				
10	X	X	X	X	X				
11				X	X	X	X		
12				X	X	X	X		
13				X	X	X	X		
14				X	X	X	X		
15				X	X	X	X		
16				X	X	X	X		
17				X	X	X	X		
18				X	X	X	X		
19				X	X	X	X		
20				X	X	X	X		
21				X	X	X	X		
22				X	X	X	X	X	X
23								X	X
24								X	
25									X

Appendix D : Analysis of the pilot interviews throught through the BNML method

Table 12 Preliminary results and hypothesis in (Pilot)

CONSTRUCT	Logistic Analyst	Industrial process analyst	Product engineer	Chief of proyect
Social interaction (SI)	Very High SI	High SI	Low SI	Medium SI
Trust	Very High Trust	Medium Trst	Low Trst	High Trst
Knowledge sharing (KS)	Very High KS	Low KS	High KS	Very High KS
Knowledge creation process				
Socialization (Sclz)	Very High Sclz	Medium Sclz	Low Sclz	Very High Sclz
Externalization (Extrn)	Very High Extrn	Very High Extrn	Very High Extrn	Medium Extrn
Combination (Comb)	High Comb	High Comb	High Comb	High Comb
Internalization (Intnz)	Low Intnz	Low Intnz	Low Intnz	Low Intnz
ICT perceived usefulness (PU)	High PU	High SI	High SI	Medium PU
ICT user satisfaction (UsrSat)	N/A	N/A	N/A	N/A
Hipothesis 1	Aproved	Not Aproved	Aproved	Not Aproved
Hipothesis 2	Aproved	Aproved	Not Aproved	Aproved
Hipothesis 3	Aproved	Aproved	Not Aproved	Aproved
Hipothesis 4	Aproved	Not Aproved	Not Aproved	Not Aproved
Hipothesis 5	Aproved	Aproved	Aproved	Aproved
Hipothesis 6	Aproved	Not Aproved	Not Aproved	Not Aproved
Hipothesis 7	Aproved	Aproved	Not Aproved	Aproved
Hipothesis 8	N/A	N/A	N/A	N/A

Table 13 People interviewed: roles, activities and kind of knowledge created (Pilot)

ACTOR	FUNCTION	ROLE	ACTIVITY	Knowledge creation
Logistics analyst	Optimization of logistic processes	Information processer	Process information	Explicit
		Information user	Analyze information	Explicit
		Knowledge converter	Transform information	Tacit/Explicit
		Knowledge Creator	Create knowledge	Tacit/Explicit
		Learner	Aquire new skills	Tacit
		Logistic methodos Improver	Improve	Explicit
			Analyze information	Explicit
			Optimize	Explicit
		Process analyst	Improve	Tacit/Explicit
			Process information	Explicit
		Sap user	Aquire new EIS skills	Tacit
Industrial process analyst	Optimize industrial processes	Indistrial process designer	Aquire new EIS skills	Tacit
			Collect information	Tacit, explicit
			Create knowledge	Tacit, explicit
			Design industrial process	Tacit, explicit
			Use EIS	Tacit, explicit
		Information processer	Collect information	Tacit, explicit
		Knowledge converter	Create knowledge	Tacit, explicit
			Design industrial process	Tacit, explicit
		Learner	Design industrial process	Tacit, explicit
Product Engineer	Engineering of new products	Improver of products	Improve products	Tacit, explicit
			To collect information	Explicit
			Process information	Tacit, explicit
		EIS user	Aquire new EIS skills	Tacit
		Information processer	Improve products	Tacit, explicit
			Collect information	Tacit, explicit
		Information user	Collect information	Tacit
		Knowledge converter	Improve products	Tacit
			Collect information	Tacit, explicit
		Knowledge creator	Improve products	Tacit, explicit
		Knowledge keeper	Improve products	Tacit, explicit
		Learner	Improve products	Tacit, explicit
			Aquirer new skills	Tacit
		Problem solver	Participant of team meeting	Tacit, explicit
		Team player	Participant of team meeting	Tacit, explicit
			Improve products	Tacit, explicit
Chief of project	Project manager	EIS user	Aquire new EIS skills	Tacit
		Information processer	Analyze information	Tacit, explicit
			Process information	Tacit, explicit
		Information user	Collect information	Explicit
		Knowledge creator	Transform information	Tacit, explicit
		Learner	Aquire new EIS skills	Tacit
			Aquire new skills	Tacit, explicit
		Manager	Collect information	Explicit
			Create knowledge	Tacit, explicit
			Manage projects	Tacit, explicit
		Mentor	Form new personal	Tacit
		Problem solver	Create knowledge	Tacit, explicit
			Manage projects	Tacit, explicit
			Solve problems	Tacit, explicit
		Promoter of collaboration	Manage projects	Tacit, explicit
		Promoter of knowledge creation	Create knowledge	Tacit, explicit

Table 14 How does ITC enable knowledge creation (pilot)

ACTOR	FUNCTION	ROLE	EIS	Knowledge creation
Logistics analyst	Optimization of logistic processes	Information processer	SAP/Tailores applications/Office	Explicit
		Information user	SAP/Tailores applications/Office	Explicit
		Knowledge converter	SAP/Tailores applications/Office	Tacit/Explicit
		Knowledge Creator	SAP	Tacit/Explicit
		Learner		Tacit
		Logistic methodos Improver	SAP	Explicit
			SAP/Tailores applications/Office	Explicit
			SAP/Tailores applications/Office	Explicit
		Process analyst	EIS	Explicit
			SAP/Tailores applications/Office	Tacit/Explicit
		Sap user	EIS	Tacit
Industrial process analyst	Optimize industrial processes	Indistrial process designer	SAP	Tacit
			SAP,Other EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
		Information processer	SAP,Other EIS	Tacit, explicit
		Knowledge converter	EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
		Learner	SAP,Other EIS	Tacit, explicit
Product Engineer	Engineering of new products	Improver of products	SAP,Other EIS	Tacit, explicit
			SAP,Other EIS	Explicit
			SAP,Other EIS	Tacit, explicit
		EIS user	SAP	Tacit
		Information processer	SAP,Other EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
		Information user	SAP,Other EIS	Tacit
		Knowledge converter	SAP,Other EIS	Tacit
			SAP,Other EIS	Tacit, explicit
		Knowledge creator	SAP,Other EIS	Tacit, explicit
		Knowledge keeper	SAP,Other EIS	Tacit, explicit
		Learner	SAP,Other EIS	Tacit, explicit
				Tacit
		Problem solver	EIS	Tacit, explicit
		Team player	EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
Chief of project	Project manager	EIS user	SAP	Tacit
		Information processer	SAP/Tailores applications/Office	Tacit, explicit
			SAP/Tailores applications/Office	Tacit, explicit
		Information user	SAP/Tailores applications/Office	Explicit
		Knowledge creator	SAP/Tailores applications/Office	Tacit, explicit
		Learner	SAP,Other EIS	Tacit
				Tacit, explicit
		Manager	SAP,Other EIS	Explicit
			EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
		Mentor		Tacit
		Problem solver	EIS	Tacit, explicit
			SAP,Other EIS	Tacit, explicit
				Tacit, explicit
		Promoter of collaboration	SAP,Other EIS	Tacit, explicit
		Promoter of knowledge creation	EIS	Tacit, explicit

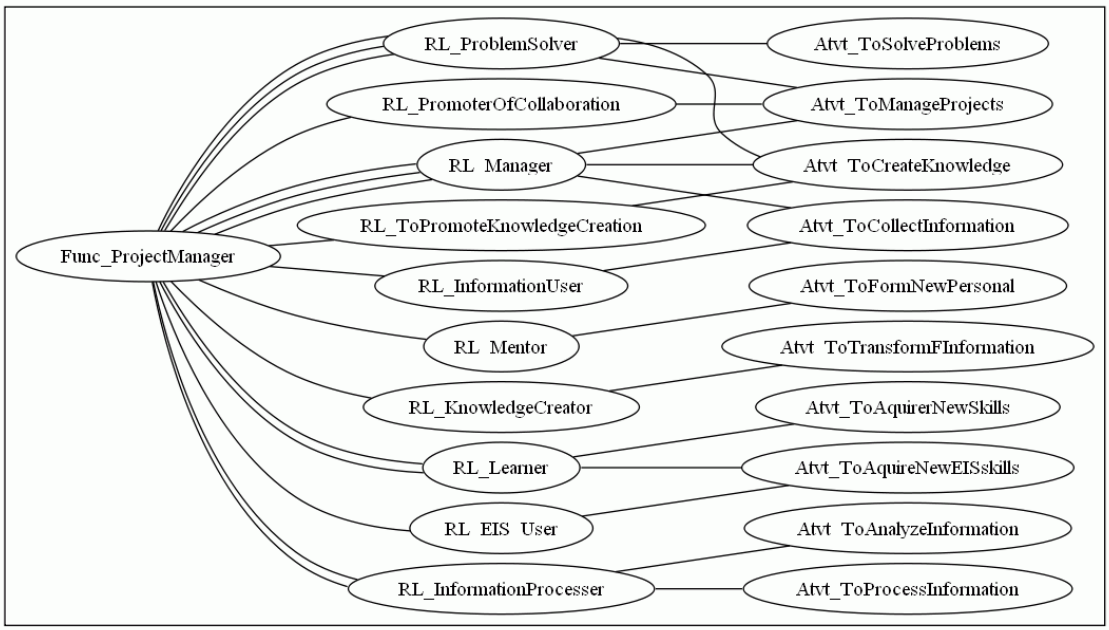

Figure 1 Project manager-Roles and activities (pilot)

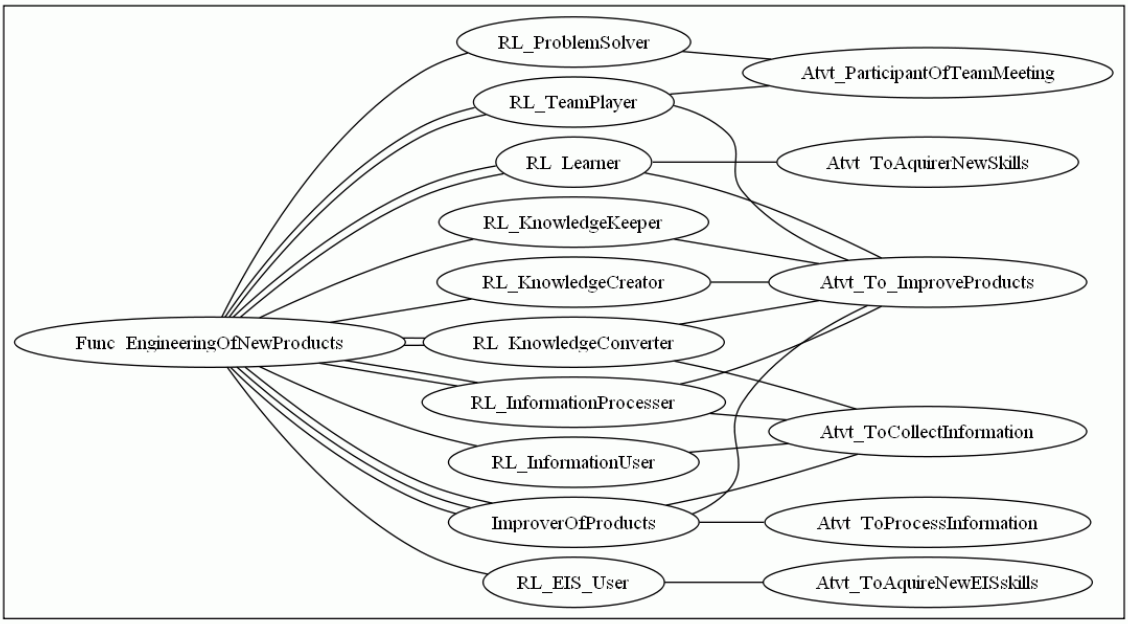

Figure 2 Engineer of new products-roles and activities (pilot)

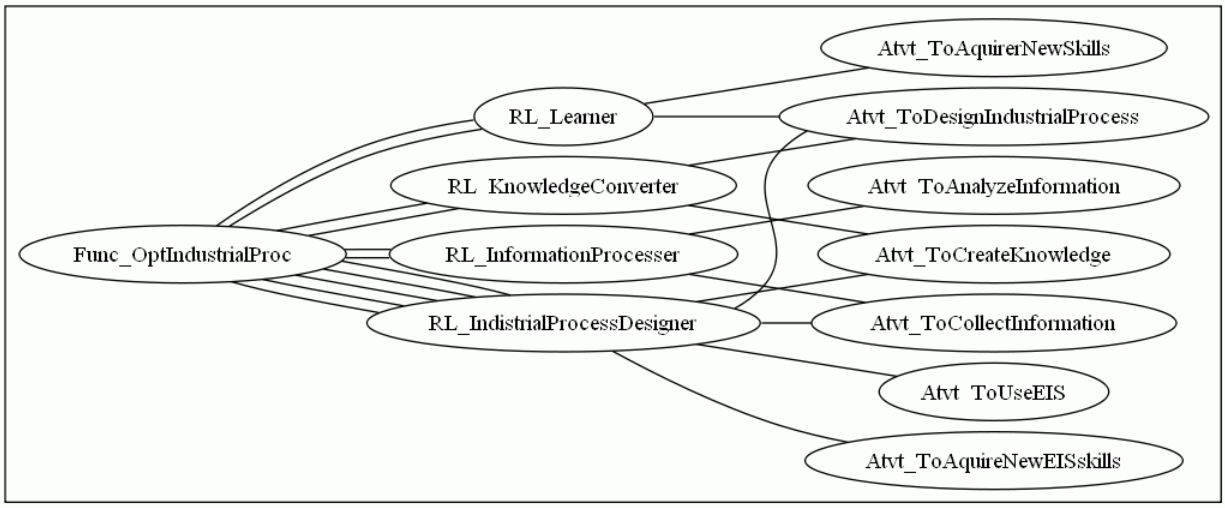

Figure 3 Process analyst-roles and activities (pilot)

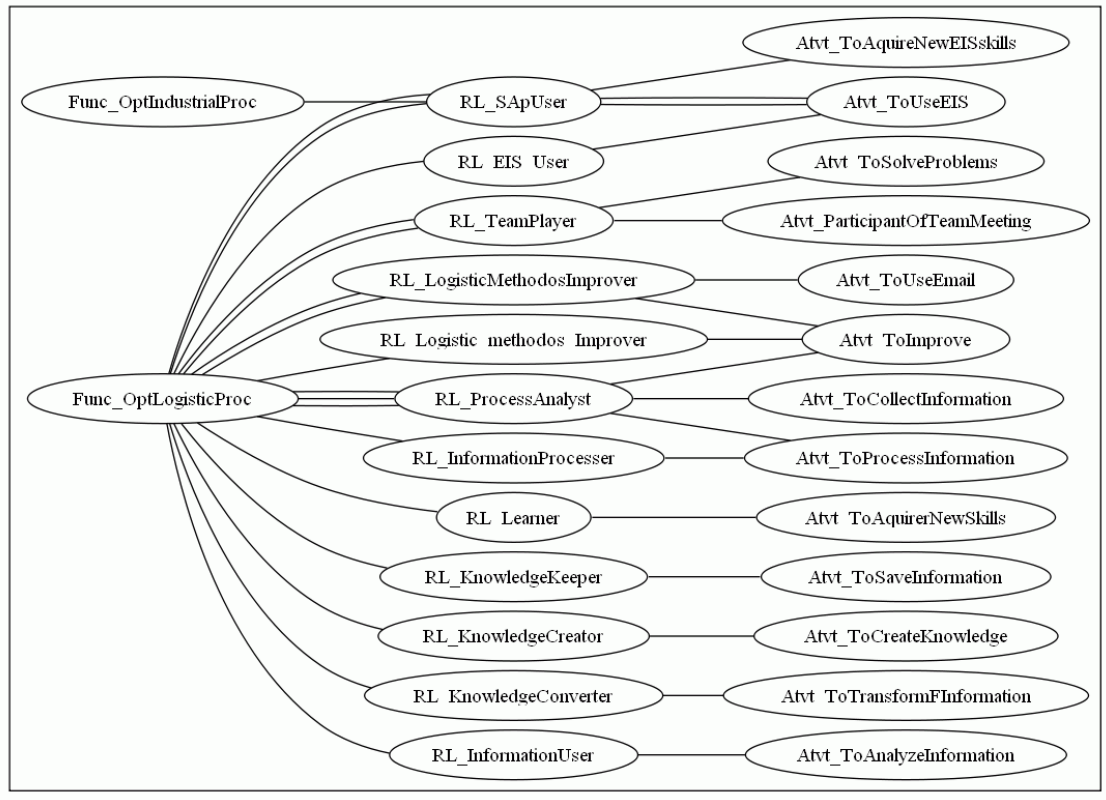

Figure 4 Logistics analyst roles and activities (pilot)

Table 15 Activities and use of EIS and applications (pilot)

	EIS or Applications used				
ACTIVITY	**EIS**	**SAP**	**Taylored applications**	**Email**	**Office**
Participant Of Team meeting	**X**				
To improve products		**X**			
To analyze information	**X**		**X**		
To acquire new skills	**X**				
To collect information		**X**			
To create knowledge	**X**				
To design industrial process		**X**			
To improve	**X**		**X**	**X**	
To manage projects		**X**			
To process information	**X**		**X**	**X**	**X**
To save information			**X**		**X**
To solve problems					
To transform information		**X**			
To use EIS	**X**	**X**			
To use email				**X**	
To form new personal					
To acquire new EIS skills					