Embodied Knowledge

A Regional Analysis of Southern Switzerland

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- Abstract -

This master thesis will investigate the topic of "tacit knowledge" and will analyse the situation of Ticino in Southern Switzerland, the only Italian-speaking part of the country. In today's economy, firms are trying to acquire all the best knowledge by hiring the best employees. But what about the already existing tacit knowledge? How do companies from Southern Switzerland manage this? These are some of the questions investigated in this paper. The project is divided into three main parts: the first discusses the topic from a theoretical perspective, by means of a literature review; the second part introduces the reader to the context of Switzerland and Southern Switzerland in particular; the final section will analyse the questionnaire and then discuss some statistical data. The data was collected by sending a questionnaire over a web platform. The methodology used is based on Arbnor & Bjerke's "analytical approach". This research highlights the fact that Ticino is a region where firms generally know what tacit knowledge is, and that some firms manage it well, while in others the potential for improvement still high. However, the feeling is that something is changing and tacit knowledge is recognized as a valuable resource that needs to be identified and managed. Willingness to invest in such an abstract resource as tacit knowledge appears to be related to two variables: the geographical location in the area under analysis, and the sector.

Index

Figure index

Table index

Introduction

From time immemorial the world population has talked about "knowledge". Let us just consider human history, as recounted in the biblical texts: the famous tree with the forbidden fruit, which caused Adam, and consequently humanity, to be cast out of the Eden Garden, is also called *"The tree of the knowledge of good and evil".* It is not clear what kind of knowledge is involved, but the three major candidates are: knowledge of everything through the mental capacities which lead to human culture; moral capacity; and sexual knowledge, since the man and woman recognise their nakedness upon eating the fruit. (Knight, 1990).

Over the last few years companies have been forced to maintain and/or improve their competitive advantages by creating inventions, so once these inventions are pushed onto the market they are transformed into products/services. Sources for innovation can be infinite, ranging from customer feedback, to market research, to internal brainstorming. Related to these points, tacit knowledge appears to play an important role in the development of innovation and, therefore, in gaining competitive advantage (Seidler-de Alwis & Hartmann, 2008).

Tacit knowledge can be describes as the: *"Unwritten, unspoken, and hidden vast storehouse of knowledge held by practically every human being, based on his or her emotions, experiences, insights, intuition, observations and internalized information. Tacit knowledge is integral to the entirety of a person's consciousness, is acquired largely through association with other people, and requires joint or shared activities to be imparted from on to another. Like the submerged part of an iceberg, it constitutes the bulk of what one knows, and forms the underlying framework that makes explicit knowledge possible"* (www.businessdictionary.com)

This research aims to analyse tacit knowledge as a critical factor for the innovation potential of a firm. Since tacit knowledge is closely related to the human factor, these fundamental resources need to be managed in order to recognise the elements that allow a firm to identify and/or to increase its competitive innovative advantage.

In collaboration with the "Swiss Knowledge Management Forum" it was decided to create a questionnaire that was sent to 600 companies from Southern Switzerland. Responses were received from 116 of these (19%).

The project will be structured in this way: an initial brief methodological introduction will be followed by a theoretical review of knowledge management, beginning with a literature review and then extending to specific approaches for tacit knowledge. The third part will be devoted to the contextualisation, where the reader will have the opportunity to enter the small but interesting world of Southern Switzerland, from both a cultural and a financial aspect.

The final part will focus on the analysis of the results of the questionnaire, where I will try to identify the strengths and the weakness of the Southern Switzerland region, and therefore to develop some potential improvements. The conclusion will analyse the most significant points emerging from the project, and some ideas for further research.

Aims and goals

Why should a company be interested in tacit knowledge, a resource that is intangible and difficult to quantify? How it is possible to manage and to grow the tacit knowledge inside a company? How do firms in Southern Switzerland firms administer these fundamental resources? Are there any potential options for improvement?
These are some of the questions that will be discussed in the following pages. As mentioned in the introduction, this paper aims to present tacit knowledge as a fundamental resource, and also, more specifically, to discover how firms in Southern Switzerland manage and exploit this resource. During the project, and particularly for structuring the questionnaire, I will try to adapt the APQC knowledge flow to the specific case of Southern Switzerland.

A formalised expression of the aims in a research question would be:

"How do firms from Southern Switzerland manage their tacit knowledge and what are the options for improvement?"

To answer to this question I decided to analyse the topic through eleven hypothesis: elaborated from the theoretical part and tested, thanks to the questionnaire, during the regional analysis.

The topic Tacit Knowledge Management (hereunder TKM) will be examined from two different perspectives: firstly, theoretical; secondly, a regional study on how firms from Southern Switzerland manage their knowledge. The methodological goals are:

- analyse the existing literature on KM;
- send questionnaires to a selected set of companies from Southern Switzerland;
- achieve a response rate of 15%;
- identify how firms from Southern Switzerland manage their knowledge;
- develop improvement measures at the firm level (management).

Methodology

This chapter presents the method chosen in order to develop the project. First of all, there is an explanation of why it was decided to approach the topic from a theoretical perspective, followed by a description of procedure followed in practice.

The methodological approach

Due to the lack of available time and the amount of data required in order to achieve the goal (i.e.: understand how companies from Southern Switzerland manage their tacit knowledge), a quantitative approach was utilised. This method, which is commonly used in social sciences such as psychology, economics and sociology, is considered as the "*systematic empirical investigation of social phenomena via statistical, mathematical or computational techniques. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships*" (Given, L. M., 2008).

As reference for a methodological viewpoint, I decided to use the Arbnor & Bjerke approaches (2009), which identify three types: analytical, systems and actors. There were two main reasons for this decision: firstly, because the authors do not see methodology simply as a recipe to adopt during a project, also arguing that methodology starts by understanding that everybody has their own beliefs about reality and about the problems they face. According to the authors: *"developing alternative ways to think about and to look at things. Such ability is thus related to the researcher's creative ability and the ability to think unconditionally"* (p.23). Secondly, I decided to follow this structure because it is the one mainly used during our studies at Aalborg University and I therefore already understand it more fully.

The first approach, the *analytical type,* views reality as a combination of facts that are independent from individual perceptions. The main goal of this approach is to study a topic and to come up with a common agreement. The knowledge creator is an external observer who analyses the situation, without any personal involvement. In this approach the result of an analytical research is a combination of truths about a subject, often interpreted as an explanation that can be generalised.

The *systems approach* interprets reality as a sum of facts that influence each other. The topic analysed depends on, and can be explained/studied and understood only in its surrounding environment. The aim of this approach is to make every new picture better than the previous one, including more networks, connections and actors related to the system. In this view, the scholars/researchers are more involved in the project and the ethical sphere therefore becomes increasingly important.

The *actors approach* is based on the assumption that reality can be understood by observing how actors perceive, interpret and act in their ecological spheres. The world is a social construction filled

by uniqueness, and which depends on human beings and on single individuals. In this approach, the researcher is actively involved in the issue analysed. Past studies on the topic can be used as inspiration or as a source of data but should not be taken for granted. The results are mainly descriptions and interpretations of the realty created by the conscious interaction between the knowledge creator and her/his research topic. The idea here is that "the *researcher enters in contact with a reality that he/she identifies with at the same time, in order emotionally, imaginatively and quantitatively to look for what is written"* (Arbnor & Bjerke, 2009, p 44).

The approach that best fits with my project is the *analytical* one. I made this choice because the aim of my thesis is to collect data about the reality of Southern Switzerland, and this is also the main purpose of the Arbnor & Bjerke analytical viewpoint. I aim to represent realty through facts, independently from individual perceptions. By this I do not mean to imply that all realty is constructed from facts but rather that facts can help to explain realty and perhaps *"will be able to come up with a common agreement about what the subject stands for"* (Arbnor & Bjerke, 2009, p 36). The scientific goal is to begin from a general starting point, and, by means of regularities and similarities, find explanations for common factors in the topic under analysis. I do not view the world in such a simplified fashion but I believe that, for certain phenomenon, simplification, by means of adopting the analytical view, can help achieve a better understanding of realty. Moreover, the analytical viewpoint seems to be the most appropriate for a regional analysis.

The methods and the methodics generally used in the analytical approach are statistics and questioning those who know; in both cases it is important that the person preparing the interview influences the answers as little as possible. In this specific case, the questionnaire was sent for completion to the management, and therefore to people that have some knowledge of the topic. The explanation of the phenomenon can be achieved through the elaboration of hypotheses, which will then be tested during the study.

The aim of the analytical researcher is to contribute to explaining the truth of the subject, reaching a explanation that can be generalised.

Operative paradigm in theory

In analytical terms, the choice of the right research technique plays a fundamental role. However, according to Arbnor & Bjerke (2009) it is possible to identify a *"Plan for analysis approach studies"* (p.230). This plan can be used for analytical studies aiming to provide a description, explanation, forecast or guide. My thesis will be explanatory in type, and will therefore not consider all the steps of the model. Here I will simply go through the elements that are interesting for my specific area of interest:

- Formulating the problem

This starting point analyses and tries to define the topic by means of the following steps: draft the hypotheses, define the variables and the concepts that are part of the hypotheses and, finally, define the population. These tasks can usually be executed after an initial theoretical reading, which brings the researcher into the topic.

- Planning the study

Drawing up a correct plan of the entire work is an essential part of any research project, and will include areas such as deciding whether to do a sample or whether to take a census. The main structure must also be defined at this point, providing the "guiding thread" for the entire project.

- Designing data collection methods

Data collection procedure definition is fundamental in any analytical study. There are many possibilities: secondary data (data collected by others and analysed by the researcher), questionnaires, experiments, interviews, etc..

- Data codification and organisation

Once the data has been collected it must then be codified and organised. This step will provide the researcher with data that can be analysed and used in order to answer the different hypotheses previously drawn up.

- Causality control

This is the most critical step because it aims to test the hypotheses and the suggested cause-effect relations prepared previously, constituting the meeting point between the hypotheses and the results of the collected and analysed data.

- Reporting the results

The final report should have a clear structure and must be reader-friendly. Graphs, tables, statistical data can make the project results easier for the researcher to explain and for the reader to understand,.

My research in practice

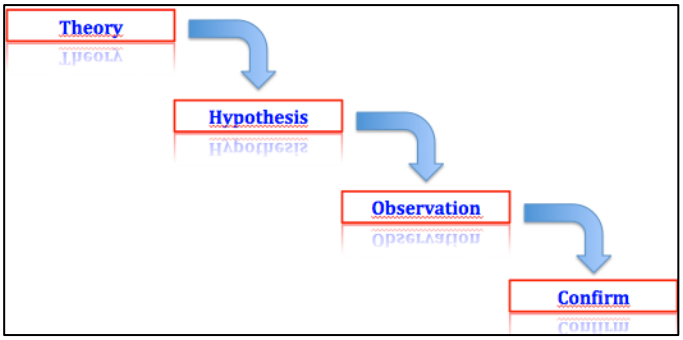
The following sub-section describes the concrete procedures implemented in order to develop the project.

The approach

A deductive line or reasoning was chosen, clearly seen by the fact that I started by analysing theories then, through the construction of the questionnaire, I built up the hypotheses, which were then tested

by the results (observations), which were confirmed (or not) by the interviews conducted subsequently. The diagram below illustrates this line of reasoning.

Figure 1: Deductive reasoning



Source: Own elaboration

According to Burney (2008), deductive reasoning goes from the more general to the more specific and can be seen as a top-down approach. This type of reasoning is often associated with quantitative methods.

The opposite to this deductive approach is induction, which has an opposite structure: starting from observation, patterns are looked for, tentative hypotheses are developed, and, finally, theories are drawn up.

Theoretical perspective

I began this study by reading and critically analysing a series of papers and books on knowledge management in general, and some specific texts about tacit knowledge. From a general perspective I will refer mainly to the following three books:

1- The New Edge in Knowledge (O'Dell, C., Hubert, C., 2011): How knowledge management is changing the way we do business.
2- Working Knowledge (Davenport, T. H., Prusak, L., 1998): How organisations manage what they know.
3- The complete guide to knowledge management (Pasher, E., Ronen, T., 2011): A strategic plan to leverage your company's intellectual capital.

These three books give me a general overview of knowledge management and its implications in a company. The scientific papers helped me to focus on the topic and to identify the literature that has been written specifically on the management of tacit knowledge. In relation to this, the most interesting papers found are:

1- The use of tacit knowledge within innovative companies: knowledge management in innovative enterprises (Seidler-de Alwis, R., Hartmann, E., 2008).
2- Strategic human resources practices and innovation performance – The mediating role of knowledge management capacity (Chen, C.-J., Huang, J.-W., 2008)

3- Tacit knowledge: some suggestions for operationalization (Ambrosini, V., Bowman, C., 2001)
4- Facilitating tacit knowledge exchange (Desouza, K., 2003): Sharing insights from a humanistic and entertainment approach to improving organization efficiency.
5- Knowledge management and innovation performance (Lundvall, B-A, Nielsen, P., 2007)

Other texts have been used in order to supplement the above-mentioned papers. (Check the bibliography)

The questionnaire

Preparing the questionnaire was one of the most important and difficult parts of the whole project because I knew that a well-structured and well-constructed questionnaire was essential if interesting results were to emerge. In this task I was assisted by two elements: first of all, as theoretical sustenance, I used the book entitled *"Business research Methods, 3th edition"* (Bryman, A., Bell, E., 2011), which introduced me in the topic "Self-completion questionnaire" and guided me through the process of drawing up the document. Bryman & Bell (2011) highlight the usefulness of documents of this type: *"Questionnaires that are completed by respondents themselves, they are one of the main instruments for gathering data using a social survey design"* (p. 231). The questionnaire was prepared on the on-line platform "Google docs®" (www.google.com)

The second "element" that helped me was the "Swiss Knowledge Management Forum" (hereunder SKMF), which supervised and approved my questionnaire. The main objective of this organisation is to: "*provide a lively and energizing environment for KM practitioners to network, collaborate, learn and share, thus enabling personal growth.*
They will incubate and foster/promote new trains of thought in Switzerland, e.g. on Knowledge Asset Management or Knowledge Visualization. Furthermore, the SKMF will host two major events per year for its members to facilitate value generation for individuals, but as well their professional career, hence for their employers. Those events will be in general open to the public.
Within their Communities of Practice (CoP`s) they work to make the experience and proven concepts of the participants accessible to our members or even a wider audience and potentially develop those into self-contained pieces of a KM Methodology.
The SKMF supports regional Round Tables as well, to support very intensive dialogues between our members on a rather business & issues related level." (www.skmf.net).

The sample of companies was selected jointly by me and SKMF, based on their significance in the local territory and the probability of receiving a response. The sample amounted to 600 companies with a response percentage of 19% (116 companies). The top management of the company, more familiar with the topic of study, were asked to complete the questionnaire.

The analysis

Having received the results, collected and graphically presented directly by "Google®", the analysis phase began, particularly for these questions that were partially or fully related to the hypothesis. A statistical analysis was conducted by means of the "qui-squared" test, which aims to identify potential relationships between these answers and four variables: sector, years of operation, region and firm size.

Before writing the final conclusion I tried to formulate some suggestions for the companies, although I am sure that the act of answering the questions had already encouraged them to think about the topic of "tacit knowledge management". I will create a document with the main results and the suggestions, and send it to all the companies that completed my questionnaire. This document will transform my project into a tool that could improve the knowledge management of companies in Ticino.

1- Theoretical perspective

This chapter presents the theoretical perspective, starting with a general introduction to knowledge, discussing the topic of knowledge management and the main topic of my project: "tacit knowledge".

1.1- Knowledge

Before entering the economics theme, I would like to discuss briefly the broad topic of "knowledge", which is often talked about although few people have a real understanding of the meaning, and they find it particularly difficult to explain exactly what "knowledge" is.

1.1.1- Winter

In order to solve this problem I will start by using the knowledge taxonomy developed by Sidney Winter, one of the best known writers on knowledge. In his well-known paper entitled "Knowledge and Competencies as Strategic Assets" (1987) he presented six dimensions of knowledge:

- **Tacit/Articulable:** tacit knowledge is the one that is intrinsic/embodied in a person, in a team or in an organisation. It can be said to be strongly linked with personal behaviour and with past experiences and is therefore more difficult to duplicate. On the other hand, articulable knowledge can be codified and easily expressed.
- **Not Teachable/Teachable:** directly linked to the previous point, some knowledge is easily teachable and other types less so. For example, we can imagine that, since it is embodied in people, tacit knowledge might be harder to teach, while articulable knowledge will probably be easier to teach and, consequently, to learn.
- **Not Articulated/Articulated:** another sub-dimension of tacit/articulable. Not articulated knowledge has not been recorded yet, while articulated knowledge has already been recorded and

codified. The first category has this not-articulated status for two main reasons: either there is no interest in recording it or it is too difficult (e.g.: tacit knowledge).

- **Not observable in use/Observable in use:** the first category refers to knowledge that cannot be identified/observed when in use (e.g.: the knowledge of how to cook a dish like a 3-Star Michelin Chef). The second category therefore represents knowledge that can be seen and observed in use (e.g.: the knowledge of how to use a smartphone).
- **Complex/Simple:** some knowledge is easier to understand and acquire while other types are very complicated. These two features can also be directly linked to the concepts of tacit and articulable knowledge, where the former is much more complex to understand and share than the latter.
- **An element of a system/Independent:** Knowledge can be seen as part of a larger knowledge system (many individual pieces of knowledge bring to life a knowledge system) or it can simply be independent.

The topic of knowledge transfer between the people in a company will be discussed later in the project. However, it can already be discussed in relation to the characteristics listed above, which lead to the conclusion that tacit knowledge, with all its associated characteristics, is complicated or quite impossible to transfer. I therefore believe that this is the most interesting type of knowledge, and the one that can really make the difference between companies that can manage this knowledge and those that cannot.

1.1.2- Nonaka & Takeuchi:

It is now time to meet two other authors: Nonaka & Takeuchi, who introduced a broader differentiation in 1995, maintaining that the term "Knowledge" can be divided in two main categories: tacit knowledge and explicit knowledge. The second can easily be compared with the "articulable" dimension of Winter's concepts.

In their book entitled "The Knowledge – Creating Company. How Japanese Companies Create The Dynamics of Innovation" (1995) they define *tacit knowledge* as follows: *"highly personal and hard to formalize, making it difficult to communicate or to share with others. (…)It is deeply rooted in an individual's actions and experience, as well as in the ideals, values, or emotions he or she embraces"* (p. 8). Moreover, they divide tacit knowledge into two dimensions:

- technical dimension: informal and hard-to-pin down skills, also called (know-how);
- cognitive dimension: reflecting the personal idea of the reality and the world around us, consisting of schemata, mental models, beliefs and perceptions.

Explicit knowledge is defined as: *"something formal and systematic"* (p. 8). The authors say that this knowledge can be easily transferred and communicated in data forms, formulae, codified procedures. In effect, it is possible to see this knowledge as computer codes, chemical formula, general rules, etc.

According to Nonaka & Takeuchi, it is possible to find differences between the Western and Asiatic ways of understanding the concept of knowledge. In particular, they explain that Japanese companies consider explicit knowledge to be merely the tip of the iceberg and they therefore believe that the tacit part is more significant. It must be borne in mind that this text was written in 1995 and I believe that over the last 5 years Western companies have also discovered the importance of "embodied" knowledge and have begun to develop managerial tools to improve and exploit their internal tacit knowledge.

Hypothesis 1: *Firms from Southern Switzerland have managerial tools to develop and exploit the internal tacit knowledge.*

1.1.3- Lundvall & Johnson

Other authors have provided different sets of distinctions. One well-known example is that developed by Lundvall & Johnson (1994), where knowledge is divided into in four types: know what, know why, know how, know who, where "to know" means to have knowledge of something.

- "Know what" means knowing facts. This type of knowledge is often close to what is usually called information. (e.g.: how many firms there are in Switzerland, how many players there are in a rugby team, the of height K2, when Switzerland became a Confederation, etc.).
- "Know why" refers to knowledge about principles and laws of motion in nature, in the human mind and in the society. This knowledge is about understanding why things happen, has played a fundamental role in technological development in certain science-based areas and can increase technological speed.
- "Know how": means having skills, having knowledge of how to do things. This type is strongly related to tacit knowledge because it consists of the abilities and skills that a person has acquired in the course of her/his life. It refers both to manual (e.g.: knowing how to make a sculpture, build a house, be a football player, etc.) and to mental capabilities (e.g.: knowing how to manage a military platoon, understand customer needs, present a new product to hundreds people).
- "Know who": refers to relationships and networks. It involves information about who knows what, who knows why, who knows how and who knows who. Knowing who has the knowledge, who is able to transfer skills and capabilities. When a company is able to manage this kind of knowledge it will be able to fill in its gaps, particularly nowadays, when specific knowledge is outsourced, it is fundamental, in every field, to know who is the person with the right information, the right experience, etc. The ability to co-operate, to interact and to communicate with different people from different disciplines is also required here, so, in other words, social skills are very important.

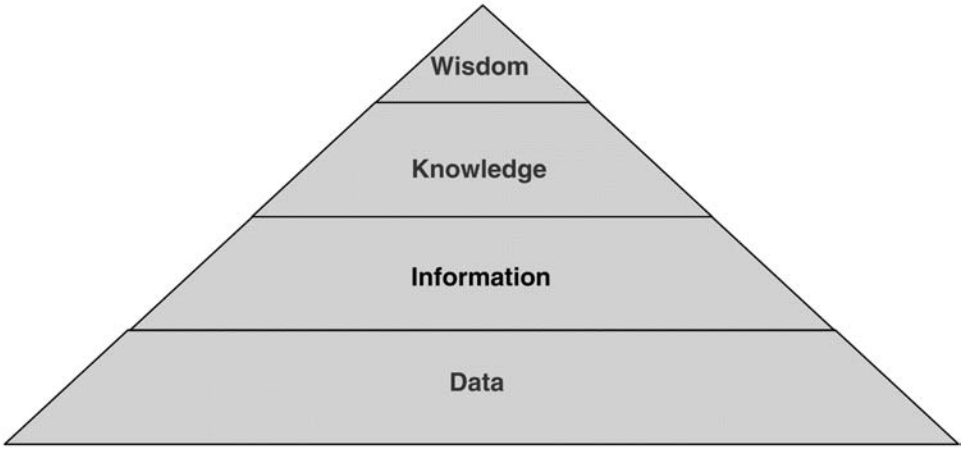
In a company, as well as in society, if knowledge is to be useful it needs to be transferred. Here also it is possible to identify the first two types that are easy to transfer, because they do not include any personal characteristics, such as experiences, personal characteristics, etc.. On the other hand, for the

second two types, involving personal abilities and skills, transfer becomes increasingly difficult, particularly for the "know how", which is closely linked to tacit knowledge.

1.1.4- Ackoff, Zeley & Cleveland

In 2007 Jennifer Rowley published an interesting paper on knowledge taxonomy, entitled *"The wisdom hierarchy: representation of the DIKW hierarchy"*, where she revisited the DIKW (Data, Information, Knowledge, Wisdom) hierarchy by going through a literary review. The main authors writing on this model are: Ackoff (1989) and Zeley (1987), Cleveland (1982). This "model" represents another point of view regarding knowledge taxonomy. The main elements discussed will be introduced in the paragraphs below.

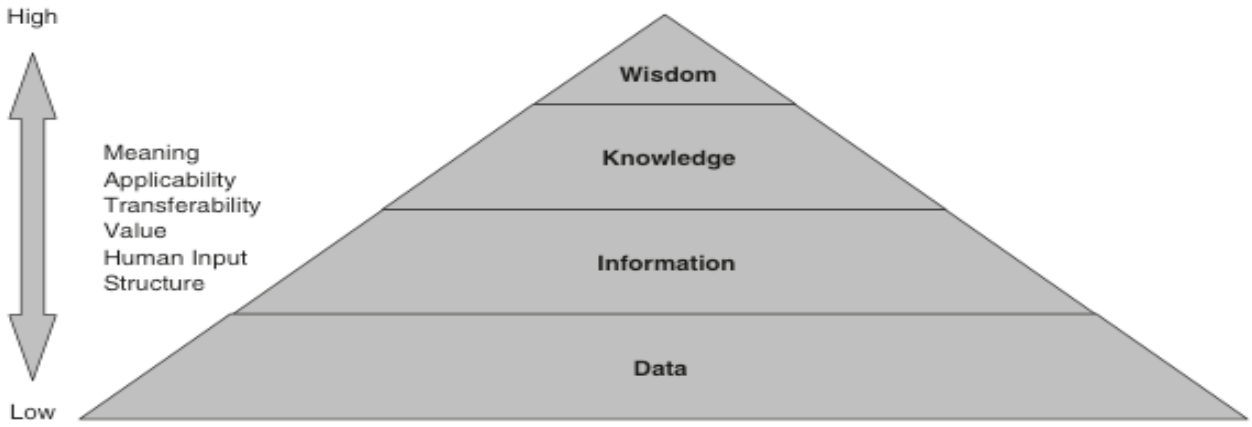
Figure 2: The wisdom hierarchy



Source: Rowley, 2007

The DIKW hierarchy can be seen in the diagram above. The model is structured like a pyramid because of the quantities. According to Rowley (2007), these is more data than information, more information than knowledge and more knowledge than wisdom. On the other hand, the opposite is the case at the qualitative level, where wisdom represents the most useful type of knowledge.

Figure 3: The wisdom hierarchy



Source: Rowley, 2007

It is time to explain the DIKW hierarchy starting from the bottom of the pyramid.

Data: considered to be the pure description of things, without any personal influence or interpretation. The main elements of data are:

- unorganised and unprocessed, resembling like simple pictures taken purely in order to represent what is in front of you;
- no specific meaning;
- not usually contextualised.

An example of data could be: "a red house", without knowing where it is, why it is red, how it has been painted, etc..

Information: can be described as formatted data, moving toward providing a representation of reality. Information can be described by these points:

- gives meaning to the data - information has been given meaning by way of context;
- can be seen as data but organized and with a structure;
- information can also be identified as data processed with a purpose.

The transformation from data to information usually take place through classifying, rearranging, aggregating, performing calculations and selecting which data can be suitable information and which cannot.

Knowledge: much more complicated than data and information. It can generally be described as the sum of data, information, expert opinion, skills and experience. The following points will help clarify this concept:

- knowledge is a property of people, so many personal aspects are involved and make an impact;
- knowledge can be viewed as the understanding of information, summed together with the personal capabilities of a person;
- knowledge is the *"sum total of our perceptive processes that help people to draw meaningful conclusions"* (Awad & Ghaziri, 2004, p. 37);
- as seen in the previous chapters, knowledge can be divided into:
    - tacit knowledge, which is embodied in people and linked to "know how", refers mostly to the human mind and is constructed through experience and jobs;
    - explicit knowledge, which is more related to "know what" and which does not need to be embodied in people because it is more about knowing facts and information.

Wisdom: the top of the pyramid, and the area strongly linked to human intuition, understanding, interpretation and action.

This topic is not discussed in great detail and I would therefore like to introduce it by means of two citations:

- *"Wisdom is the highest level of abstraction , with vision foresight and the ability to see beyond the horizon"* (Awad & Ghaziri, 2004, p. 40).
- *"Wisdom is the ability to act critically or practically in any given situation. It is based on ethical judgement related to an individual's belief system"* (Jashapara, 2005, p. 17-18).

Concluding this first theoretical part focused on "knowledge", it can be argued that although the topic has been largely discussed from different perspectives and angles, all the approaches divide knowledge into two or more types or sub-dimensions. It is also possible to see that, in one way or in another way, all the theories referred to have identified two main currents of knowledge:

- knowledge which is mainly about facts and things; usually called explicit knowledge and answering the questions "what?" and "why?";
- knowledge which is all about personal feeling, interpretation, mental models, beliefs and perceptions. This knowledge is generally called tacit knowledge and answers the questions "how?" and "who?".

The table below summarizes these theoretical approaches, dividing the individual elements between tacit type knowledge and explicit type knowledge.

Table 1: Knowledge theoretical approaches

Author	Tacit knowledge	Explicit Knowledge
Winter (1987)	Tacit Not teachable Not articulated Not observable in use Complex An element if a system	Articulable Teachable Articulated Observable in use Simple Independent
Lundvall & Johnson (1994)	Know how Know who	Know what Know why
Ackoff (1989) and Zeley (1987), Cleveland (1982)	Knowledge Wisdom	Data Information

Source: Own elaboration

The pages above discussed some different perspectives on knowledge as a general term, while the next step will consider the managerial aspect and, more specifically, the topic of knowledge management.

1.2- Knowledge management

This chapter introduces the main topic of "knowledge management". In order to achieve the goal of providing a general overview of the subject, 4 models will be described, representing four different ways in which to interpret knowledge management.

- The SECI model: Nonaka & Takeuchi (1995)
- The Knowledge Management Process: Davenport & Prusak (1998)
- The Knowledge Management Journey: Pasher & Ronen (2011)
- The APQC Knowledge Flow Process: O'Dell & Hubert (2011)

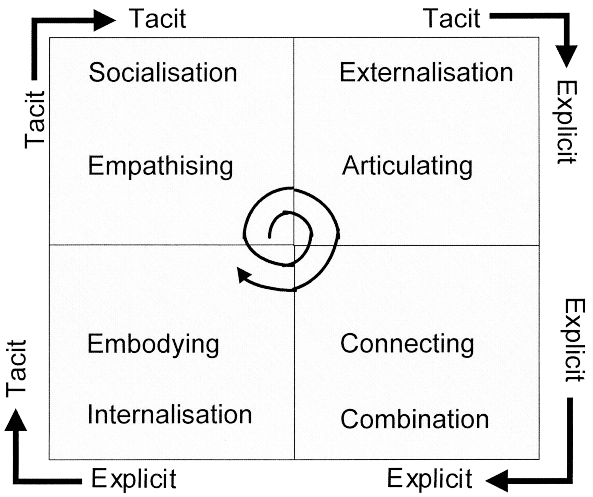
The following section will describe these theoretical approaches, trying to identify the most important elements, which will then be useful in the questionnaire preparation process.

1.2.1- The SECI model

We have met Nonaka above, and his concept of knowledge. This chapter focuses on his model of knowledge management: *"the knowledge spiral"* also known as *"the SECI model"* (Socialization, Externalization, Internalization, Combination) elaborated by him in collaboration with Toyama and Konno (2000). Here also it refers mainly to the differences between tacit and explicit knowledge, besides presenting the potential interactions between the types of knowledge; in other words, they illustrate how dynamic knowledge switches between tacit and explicit knowledge.

The image below shows the main elements of this model, which will then be described.

Figure 4: the SECI model



Source: Nonaka, Toyama & Konno, 2000

In the paper entitled *"SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation"* (2000), Nonaka, Toyama & Konno describe the spiral in a complete way. This model analyses how to move knowledge from tacit to explicit, and from explicit to tacit, or, in other words how knowledge can be created through the conversion of tacit and explicit knowledge.

In the model they identify four ways of converting the two types of knowledge: Socialization (from tacit to tacit), Externalization (from tacit to explicit), Combination (from explicit to explicit), Internalization (from explicit to tacit).

Socialization

First of all it is assumed that transforming new tacit knowledge into acquired tacit knowledge is not an easy task. The authors maintain that the only way in which this can be done is through shared experience, which can only be achieved by spending time together and/or by living in the same environment (in this specific case, in the same workplace). For example, we can imagine a trainee who acquires know how through hands-on experience rather than from written manuals. Informal activities, inside or outside the firm's boundaries, will foster this conversion. Important elements, such as friendship, trust, beliefs, values, etc, can be created and shared. The main area analysed in this project is represented by internal knowledge, but external sources of tacit knowledge must not be forgotten (e.g.: from suppliers, customers and other stakeholders). These are fundamental sources of knowledge that can be incorporated through informal meetings.

Externalization

"When tacit knowledge is made explicit, knowledge is crystallised" (Nonaka et al, 2000, p 9). This affirmation sums up the main elements of this paragraph. This process aims to "translate" tacit knowledge into explicit knowledge. I consider this activity to be very complicated and difficult to achieve, but the authors argue that it is the only way in which to create new knowledge. The process can be simplified and assisted through the use of metaphors, analogies and models. As final result we can imagine the concept of a new product, improvements to the manufacturing processes through the acquisition of the employees' tacit knowledge and/or a new marketing structure. All these results can be improved by the interaction of different types of knowledge, for example through team working, job rotation, etc..

Combination

The aim in this quadrant is to transform explicit knowledge into more complex and systematic sets of explicit knowledge. Consequently this new knowledge will be improved thanks to the interactions with internal and external partners. Once it has been combined, edited and processed, it will be distributed inside the company, trying to reach as many collaborators as possible. The support of an ICT network and databases can be really helpful here, both in order to translate the knowledge and to transfer it to all the collaborators. Examples of this can include the quality manager who collects

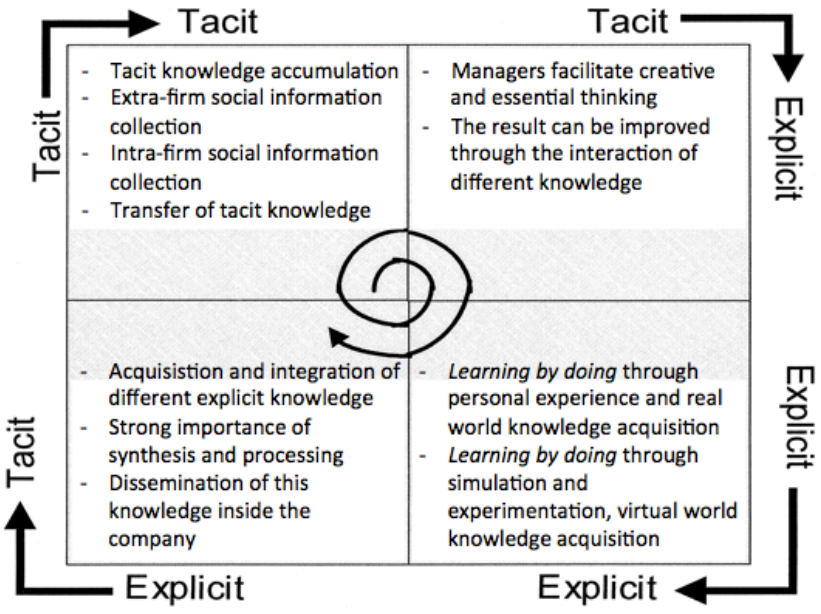
customers or collaborator feedbacks and compiles them in a report, or the breakdown of the corporate strategy into operational activities. Although this element of the model is not fundamental for my project, it is still important because the essential role played by the explicit knowledge inside a company must not be forgotten.

Internalization

This process aims to take explicit knowledge and embody it in people, in other words transform it into tacit knowledge, and can be directly related to the concept expressed by Kennet Arrow (1962): *"the learning by doing"*, which refers to the capacity to improve the way of doing things by regularly repeating the same action, practice and self-perfection. It is important that each individual interprets the explicit knowledge and tries to combine their experiences, and consequently their tacit knowledge, with the new one acquired; s/he should therefore reflect on data, manuals and other types of knowledge and will consequently internalize the existing knowledge. For a company, an asset will become valuable only when it is "*based in the form of shared mental models or technical know-how"* (Nonaka et al, 2000, p 10). Interaction between people is very important here as well, because the socialization will trigger off a new loop of the spiral, where the circle restarts with the transformation of new tacit knowledge into acquired knowledge.

The diagram below illustrates the main elements of the model described above.

Figure 5: Important points of the SECI model



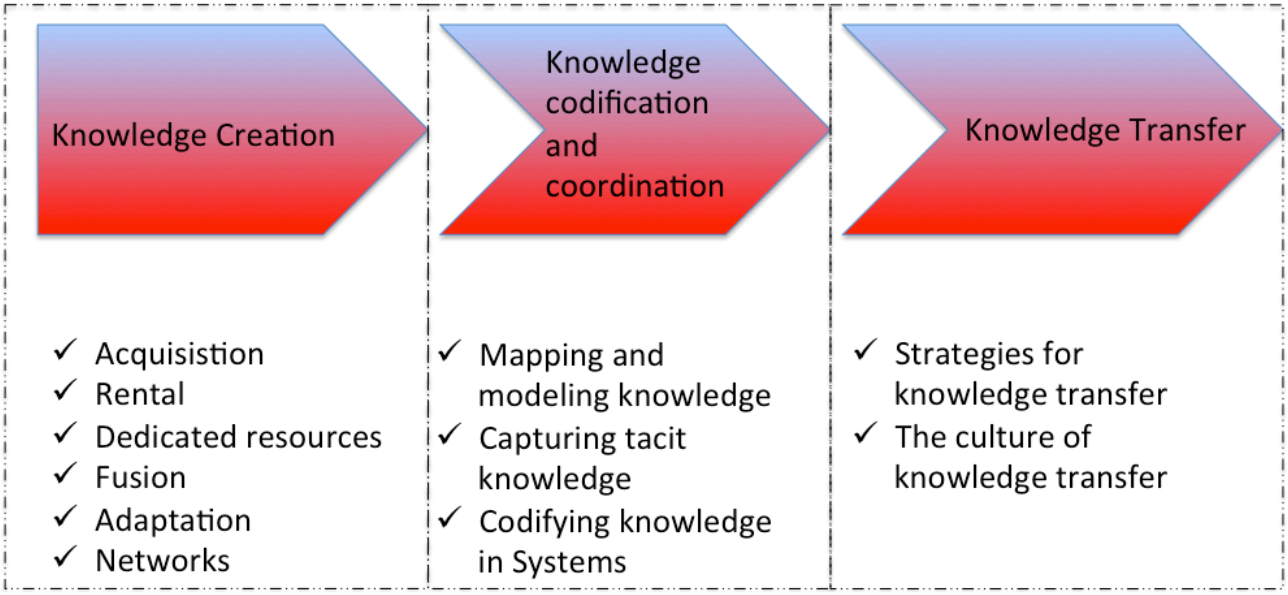
Source: Adapted from Nonaka, Toyama & Konno, 2000

1.2.2- The Knowledge Management Process

In their book entitled *"Working Knowledge: how organisations manage what they know"* (1998), Davenport & Prusak, identify a knowledge management process which is structured into 3 main

blocks: knowledge generation, knowledge codification and coordination, and knowledge transfer. These main areas are then all divided into further sub-sections. The image below shows the precise structure of this Knowledge Management process.

Figure 6: The Process of Knowledge Management



Source: Own elaboration, from Davenport & Prusak (1998)

In their book Davenport & al., emphasise the importance of knowledge, and the growing interest it is arousing in global management, viewed as the element on which can depend organisational success and the failure.

The following paragraphs introduce these aspects, summarizing and identifying the main elements presented by the two authors.

Knowledge generation

Many companies and institutions identify knowledge generation/creation as a black box; in other words, one of the aims of the company will be to hire smart people and leave them simply to get on with their work. However, firms use and generate knowledge every time they interact with their environment, and it can therefore be imagined that the generation of knowledge mainly happens when people combine their experiences, values and normal rules (Davenport & Prusak, 1998).

- *Acquisition*

Knowledge acquisition can be achieved through external gains as well as from internal development. The easy way in which to access to knowledge is to acquire it or to hire people that have it. Key people, talents, knowledge workers, are often acquired by a company in order to increase the knowledge potential, and especially in relation to tacit knowledge, which can be acquired only by "buying people". According to the authors, when assessing new employees, management often fails to distinguish between general capabilities/skills and the embodied side of knowledge, the side that can really bring

critical benefits to the company. In other words, they care more about university degrees and CVs in general than about trying to understand the "know how" and the tacit knowledge possessed by the new employee. It is true that companies might face two main problems: firstly, it is difficult to quantify and qualify the assessment of intangible assets, and secondly, they are worried that the knowledge resources being acquired may walk out of the company, leaving the firm in a critical situation.

Another element emphasised in this chapter is the acquisition of an entire company. In this way the acquiring firm will also gains the knowledge resulting from interaction inside the acquired company. The purchase phase is dangerous because there is the risk that the integration process might disrupt the *"ecology and the knowledge-creating environment"* (Davenport & Prusak, 1998, p. 56).

Concluding this first section, it can be argued that knowledge generation usually begins with the acquisition of knowledge, which can be done through the purchase of single employees and/or the acquisition of an entire company. This phase is particularly important and delicate and must therefore be managed carefully. The acquiring company must spend resources in order to evaluate and protect the knowledge workers and the environment during and after the purchase, and must also encourage integration and meshing between the existing and the bought knowledge resources.

- *Rental*

Renting knowledge is another way in which to gain access to an amount of knowledge, perhaps by means of collaboration with universities, where firms are able to acquire both tacit and explicit knowledge from students and from research teams. Many companies often finance university/institutional research in exchange for the right to the first commercial use of promising results. However, the rent is mainly limited to explicit knowledge, which can easily be codified and transferred. Hypothetical rental of tacit knowledge can be achieved by physically integrating students or professors into the company in such a way that, although the sources will be temporary, their experience and practical skills will probably stay with the company.

The spectrum of rental possibilities also includes external consultants, who can be very useful for specific topics and/or problem solving, although the interactive period is usually very limited and only a small portion of knowledge is therefore transferable. This knowledge is generally explicit and easy to share.

This possibility of generating knowledge by renting from outside is not strongly related to the main topic of this project because it is linked to an external source of knowledge. However, as already mentioned, it is important to consider the importance of these possibilities outside the boundaries.

- *Dedicated resources*

Dedicated resources are resources that are established specifically for the purpose of generating knowledge, and can include groups or units set up *ad hoc*. The main examples of this type consist of

R&D departments, which are always looking for interesting, new knowledge that can be acquired through internal as well as through external partners. Some practical examples are:

- IBM: the company has developed dedicated competency-development groups in key consulting domains;
- Motorola/Merck/McDonald's: these companies have all established universities that represent training facilities aiming to generate new sources of knowledge;
- Xerox: the company has created the Xerox PARC (Palo Alto Research Centre), which has become one of the most well-known examples.

Transferring knowledge in these specific centres is not an easy task, particularly because people from different backgrounds and from different cultures/countries interact. So it is fundamental that the management of these places lay the foundations for achieving knowledge generation and exchange.

I believe that companies lacking the resources to create large R&D departments could start to invest in internal dedicated resources, such as, for example *team working*, an activity that aims to bring together people from different departments so they can interact with each other.

Hypothesis 2: *Firms from Southern Switzerland utilize cross-departmental team-working.*

- *Fusion*

The main concept expressed here relates to the possibilities for mixing together different people, from different backgrounds and from different cultures. This fusion should concretely have a topic, a final goal (e.g.: a problem to solve) and the possibility of generating discussion between people, which will create new synergies. Leonard-Barton argues that creative solutions and innovation can be achieved only through *"intentionally combining people with different skills, ideas, and values"* (Leonard-Barton, 1998, pp. 63-64).

In *"The knowledge-Creating Company"* Nonaka & Takeuchi (1991) also discuss the fusion concept and they discovered that bringing together people from different backgrounds is a requirement for achieving knowledge generation. Mixing different knowledge and experiences will prevent falling into routine solutions. Nonaka & Takeuchi also argue that companies looking for this kind of process need to consider team composition, firstly because the diversity of the group should be proportional to the complexity of the problem, and secondly because it is important to ensure that the people involved are willing to interact and collaborate with other workers. At the beginning of a project of this type there will be chaos, so in order to avoid total chaos it is important to have a moderator or a facilitator who will handle the interaction between the different actors involved.

Fusion is an activity that can be applied both internally to the company, for example combining different divisions, as well as in partnerships with external actors/stakeholders. In order to express the concept with one example, I can envisage the development of a computer game; the mother-

company will be interested in the fusion of different knowledge that will probably be involved: IT specialists, expert players, psychologists, athletes (if it is a sport game), external people that have nothing to do with the game but who can bring perspectives that would probably "never" be identified by those directly involved. Experience plays an important role in these situations because most experienced employees can share their knowledge with those who are less experienced.

Davenport & Prusak (1998) maintain that it is possible to identify 5 principles that can improve fusion:

- convince people about the utility of knowledge and consequently about the need to invest in the process of generating it;
- identify the key actors/workers that can carry out the fusion efforts;
- identify differences as opportunities and positive aspects rather than as sources of conflict, and avoid responding to complex questions with simple answers;
- rewards will encourage people to clarify the need for knowledge generation, and will lead people toward a common goal;
- the true value of knowledge can be calculated through the utilisation of measures and milestones.

It often seems that mixing/fusing different types of knowledge automatically generates conflicts; on the contrary, if well managed, it creates new synergies and new ideas: the basis for knowledge generation.

- *Adaptation*

"Human minds are the most flexible assets a company has - and the most rigid. People are capable of making astounding leaps in intuition and, at the same time, of tenaciously clinging to the details of petty, unproductive routines" (Leonard-Barton, 1995, p 206). This citation relates to the fact that the environment in which we live, work and sometimes survive is in a state of continuous flux. Companies are challenged by causes that are mainly external but also internal, and that force them to modify their structure and strategy. Some authors argue that it is necessary to "adapt or die" ; in other words, firms that do not change and adapt to the new situation are likely to fail.

The importance of the four "know" categories identified chapter 1.1.3. can be related to this last concept. It appears evident that knowing what is changing, why it is happening, how to face the new situation and knowing who can contribute to improving or solving a situation, play a critical role in such a variable environment.

Davenport & Prusak (1998) emphasise a fact that I believe is very significant: the difficulty encountered in changing something that has worked and is maybe still working. Firms often feel confident about their effective capabilities and strengths, and do not see the need to make any changes. The declaration made by one manager is meaningful in this context; he told the authors:

"We're on a rocket to the moon. Why go off course with changes?" (Davenport & Prusak, 1998, p. 63). After a series of financial crises, the world has seen the need, in every type of activity, to respond to the challenges set by the environment by generating new knowledge. The "problem" is based on the fact that the company "know how", has often been built and developed over time, and has therefore become a social construct, making it incredibly difficult to implement new concepts in the company and bring the firm to a state of limited agility. According to the authors, a firm's ability to adapt is based on two principal factors:

- the ability to transform existing knowledge, capabilities and skills into resources that can be utilized in a new way;
- the capacity to be open to the new, and to develop its *absorptive capacity.*

In order to improve their adaptive capacity employees must be motivated and encouraged to make frequent changes to their jobs and functions. As argued *"Employees who are willing and able to learn new things are vital to an adaptive company"* (Davenport & Prusak, 1998, p. 63).

It can generally be argued that it is important for a company to promote its flexibility in a proactive way, in the sense that it starts developing and creating new knowledge before any changes have taken place.

- *Networks*

The authors argue that knowledge can be created through informal networks, which should be built up through self-organisation. Colleagues are often brought together by their shared interests, and by speaking to each other can informally solve problems. By informal meetings we mean activities spontaneously organized, which have nothing to do with the work time or work meetings. On these occasions people feel freer to express their opinions and ideas and consequently other people will feel freer to comment/criticize the initial idea. This environment facilitates the interaction between different knowledge and experiences.

Some companies are trying to formalize these knowledge networks; I believe that this is possible but that it will be difficult to fully replicate the effect achieved by the level and quality of interactions found in real informal activities (e.g.: dinners, mountain walks, etc.) However, managers play a fundamental role as facilitators, in the sense that they can contribute to creating an environment (between people and physical) that can facilitate and stimulate the interaction of people. If workers interface well in the workplace, they will probably be keen to meet up with each other in their free time.

Hypothesis 3: *Firms from Southern Switzerland facilitate and stimulate the creation of communities of practice/informal networks.*

Let us now move on to the next step of the *knowledge management* process, which focuses on the codification and coordination of knowledge.

Knowledge codification and coordination

The main concept that will be expressed in this chapter is related to bringing organisational knowledge and making it accessible to the entire company. In order to do this, knowledge must be codified, in the sense of translating it into a "language" that everyone can understand. The main problem here appears to be codifying the knowledge without losing its distinctive properties. It appears clear that explicit knowledge will be easier to codify than tacit knowledge.
Davenport and Prusak (1998) identify 4 steps that must be completed for knowledge to be successfully codified:

- identify the business goals that the codification will help to achieve;
- managers must identify all the types of knowledge that will help to reach the goals;
- evaluate knowledge in terms of usefulness and appropriacy for codification (it might possible to argue that relevance is more relevant than completeness);
- identify how concretely to codify and how to distribute.

They emphasise the fact that tacit knowledge codification is a process that can be only partially achieved: it is possible to explain how to drive a F1 car but this form of knowledge will not allow you to win a F1 race. *"The skills involved are too complex and subtle, too internal; they just can't be expressed in words that can be put to much use".* (Prusak, 1998) Coordination of knowledge is directly linked with codification because once knowledge has been codified (when possible), the system/ management will then be responsible for connecting the right people/the right knowledge with those who are experiencing problems.

- *Mapping and modelling knowledge*

Understanding where to find knowledge, and knowing who has which kind of specific/technical knowledge play a central role in knowledge management process. A good knowledge map will allow people in the company to access knowledge sources that otherwise would be hard to find. Many companies use the organisational chart as a knowledge map, but this map is often very poorly drawn and represents only the hierarchical structure without emphasising key knowledge, which can be found everywhere in the organisation. Moreover, once the knowledge has been identified, the person drawing the map must ensure that the knowledge worker is also willing and able to share it.

The first step in any map design is to assemble the elements. Everyone in the company is a piece of the knowledge geography, and the role of the hypothetical *knowledge manager* is to identify all these pieces and bring them together in one single common map.

An example of mapping is represented by the Microsoft knowledge map. The company's main goal in the project was to *"improve the matching of employees to jobs and work teams"* (Davenport & Prusak, 1998, p. 75). They structured the development into 5 main steps:

- develop a structure of knowledge competency types and levels;
- define the knowledge required for specific jobs;
- rate the performance of individual employees in particular jobs in terms of knowledge competencies;
- implement the knowledge competencies in an on-line system;
- link the knowledge model to training programs.

Four defined skill levels were used in the analysis: basic, working, leadership and expert. After having completed this knowledge project, Microsoft discovered that map building facilitates knowledge management and promotes the idea that corporate knowledge belongs to the firm and not just to a group or individual.

Management does not usually have much opportunity to model the knowledge in the firm, but they may be able to identify the variables in the model that can be affected by their actions.
Firms often also utilize technologies (software) that make it much easier to search by topic or word. This system is substantially more efficient than stacks of papers, but it must be well structured and all the necessary information must be entered properly.

- *Capturing tacit knowledge*

Tacit knowledge is a fundamental part of organisational knowledge and it is therefore important that it is always available and, above all, that it does not get lost if the knowledge owner leaves the organisation. So specific knowledge must not be wholly concentrated in one person, and in order to avoid this situation the management must adopt strategies to transfer as much knowledge as possible to other people.

One way in which tacit knowledge may be transferred from one person to another can be represented by narratives, which, according to the authors (Davenport & Prusak, 1998), constitute a *" rich and complex understanding of an event or situation in a human context"* (p. 82). The story can then be encoded, remaining in the company and therefore preventing the existing knowledge from disappearing.

The main critical element of a knowledge codification process is characterized by the embodied knowledge, which is usually completely owned by a person and which is also automatically partially embodied in the process/product s/he developed. It is definitely not easy to distinguish between these two elements, particularly between which part is embodied in the product and which is not.

- *Codifying knowledge in systems*

This chapter also returns to the differences between tacit and explicit knowledge. Expert systems and artificial intelligence play a role in knowledge management, but this role is very limited, especially in terms of tacit/embodied knowledge. Although there have certainly been incredible technological developments (simply think of the computer that can play chess even better than people), no software will be able to codify and coordinate "intangible" tacit knowledge since there are often no rules or logical systems.

Explicit knowledge, which is by definition already codified, must be evaluated and made accessible to people before it can benefit the corporate body.

Monsanto Company is a multinational agricultural biotechnology firm with approximately 18,000 employees and a turnover of 8.5 billion dollars (2007). A manufacturer of technical means for agriculture, it is a well-known player in the production of transgenic seeds and, since March 2005 after the acquisition of Seminis Inc, has also become the world's largest producer of conventional seeds. Monsanto conducted a knowledge management architecture project in which they discovered the importance of knowledge harmonisation (not be confused with homogenization). They consider that in order to have a common understanding on how to mean thinks it is essential that people can share experiences and knowledge.

To conclude these paragraphs dedicated to the *knowledge codification challenge*, it is possible to assume that the codification activity it is fundamental to bring out the knowledge that otherwise exists only inside single individuals. During the codification process it is very important that the knowledge maintains its original nature and features. Technology is improving, and will continue to improve, the knowledge codification process, although it will never substitute human minds, which are definitely the only "instrument" that allows humankind to generate, codify and transfer tacit/embodied knowledge. According to Zadeh (1995), human input is still vital to knowledge codification.

Knowledge transfer

The magic recipe could be to hire the right people and provide them with opportunities for interaction and discussion. The first element is not the easiest one, while the second is definitely problematic. From a general perspective, everyday knowledge is shared internally in the company and with external partners and it is essential that firms keep track of this knowledge. This element is particularly important when the organisation is large and there is therefore less probability of finding the knowledge you need in the neighbouring office.

- *Strategies for knowledge transfer*

Davenport & Prusak (1998) believe that the spontaneous transfer of knowledge is a vital activity for any company, that face-to-face meetings play a particularly important role and that they must be

motivated and promoted.

In their book the authors emphasise the importance of water coolers and talk rooms, maintaining that these places promote and encourage informal and spontaneous knowledge transfer because people are more willing to discuss work, projects, etc. there, in a more "easy-going" way and, bouncing ideas around, they easily get advice on how to find solutions to problems, or they develop great ideas for all kinds of improvements, particularly if they are talking to people from different backgrounds, with different specialist skills and with different experiences. According to Webber (1993) *"In the new economy, conversations are the most important form of work. Conversations are the way knowledge workers discover what they know, share it with their colleagues, and in the process create knowledge for the organisation"* (p. 28).

The new trend of "work at home" can generate benefits in term of worker flexibility, but on the other hand it also reduces the frequency of informal knowledge transfer. One solution to this problem could be to schedule one or two days per week when all the employees are in the company and have the opportunity for informal discussion.

Hypothesis 4: *Firms from Southern Switzerland have physical places that can facilitate knowledge exchange.*

It is in any case important that the strategy for sharing knowledge follows the organisational culture, or, if this culture does not fit with informal meetings, attempts should be made to modify and reorient it so that it becomes one of knowledge-sharing. This process will take long time and needs strong efforts to be successful.

In relation to this topic it is possible to highlight the geographical difference between Asian and the Western cultures. For example, Japanese firms are more willing than American companies to introduce areas/rooms for "not organized" discussion. In fact, they view group dinners and visits to nightclubs as important knowledge-sharing mechanisms.

Knowledge fairs and *open forums* are other examples of places where workers can interact informally. Although they are orchestrated forums they still allow for spontaneity because, in such a fairs, there are no preconceptions about who should talk to whom. During such events people will make new connections and develop new synergies and will therefore bring home new knowledge and experiences from other realities. Contrary to conferences, in knowledge fairs conversations and informal meetings are viewed as playing central roles, and not as a spare time activity. Due to the importance of these occasions, conversations must be encouraged to flourish so fairs must be organized and partially structured.

In the knowledge transfer process it is also important to differentiate between tacit and explicit knowledge. I will not repeat this concept already referred to above, but it is important to emphasise

the fact that tacit knowledge transfer also involves the transfer of some explicit knowledge. Some activities (e.g.: partnership, mentoring and apprenticeships), need the involvement of both types of knowledge. Davenport & Prusak (1998) identified three elements that can facilitate the transfer of knowledge:

- communication: which must be direct, face-to-face and structured, if possible in an informal manner;
- areas: which aim to favourite and facilitate knowledge sharing, the development of solutions and the "natural development of every type of knowledge.
- IT technologies: which allow people to share knowledge directly. For these technologies, the richer the tacit knowledge, the more advanced are the technologies that should be used, although not all knowledge can be transferred by means of technology

The following sub-chapter will introduce the cultural aspects that can affect knowledge transfer.

- *The culture of knowledge transfer*

Davenport and Prusak (1998) see cultural aspects as a threat for knowledge transfer, maintaining that these factors are generally frictions because they slow down or prevent the knowledge transfer. The table below reports the analysis conducted by these authors on these frictions, together with the potential solutions.

Table 2: Cultural aspects as a threat for knowledge transfer

Friction	Possible solutions
Lack of trust	Build up relationships and trust through face-to-face meetings
Different cultures, vocabularies, frames of references	Create common ground through education, discussion, publications, teaming, job, rotation
Lack of time and meeting places, narrow idea of productive work	Establish times and places for knowledge transfer: fairs, talks rooms, conference reports
Status and rewards go to knowledge owner	Evaluate performance and provide incentives based on sharing
Lack of absorptive capacity in recipients	Educate employees for flexibility; provide time for learning; hire for openness to ideas
Belief that knowledge is the prerogative of particular groups, not-invented-here syndrome	Encourage non-hierarchical approach to knowledge; quality of ideas more important than status of source
Intolerance for mistakes or need for help	Accept and reward creative errors and collaboration; no loss of status from not knowing everything

Source: Own elaboration from Davenport & Prusak (1998)

Work culture and trust are the key elements for effective knowledge transfer since the more similar

are the people interacting, the easier it will be for knowledge to be exchanged between the actors. Another important task will be to have the right people in the right place, for example have experienced people working side-by-side with young people; working in this way, it will be possible to transfer both tacit, and explicit knowledge from people that "know a lot" to people that "know a little". Conversely, it is not very useful to send a junior engineer to a conference because, firstly, s/he has less personal knowledge and will profit less from the experience; and secondly, only a few people will listen to her/his potential suggestions.

In all companies specific people are very often evaluated/hired much more for their reputations/qualifications than for their level of basic/creative knowledge. This way of judging people may be easier and quicker, but an incredible amount of knowledge may also be missed.

Hypothesis 5: *Firms from Southern Switzerland take into account the tacit knowledge of people before hiring them.*

Davenport & Prusak (1998) state that the process of transferring knowledge can be divided mainly into three subsequent activities: transmission, absorption and use. It is generally possible to identify knowledge that is transmitted from one entity to another; once the first activity (transmission) has been completed, the knowledge will be absorbed by the company, and then, in order to become really useful, it must be used by the organisation to develop something specific or to solve a particular problem.

It is possible to identify one main problem linked to the process of knowledge transfer: *resistance to change* and consequently to innovation. Many companies behave in this way: they will resist the *new* because they generally believe that what they are doing is the best way to do things and they therefore resist new knowledge, particularly if it is tacit, not tangible and if financial return is not an immediate consequence.

All the aspects discussed until now, especially the frictions, make a direct impact on the velocity and the viscosity of knowledge transfer. In terms of velocity we mean the speed at which the knowledge moves through the organisation (awareness of the existence of this knowledge and access to it, the use of technologies that can accelerate the process, etc.). Viscosity refers to the quality of knowledge (how much is really absorbed, how much is then used, etc.) and is mainly affected by the method of transfer; for example, a mentoring activity will have a positive impact on the quality of knowledge transfer. The most efficient way to transfer knowledge will suggest high velocity and high viscosity (quality), however in effect, moving knowledge from one person to another often requires compromise between these two factors. I believe that quality must be prioritized, although it will take longer than expected.

Throughout its development the company 3M has tried to encourage new ideas and bring new ideas into production, and consequently generate profits. The company culture oriented toward delegating responsibility, tolerating mistakes and respecting individual talents has facilitated efficient knowledge

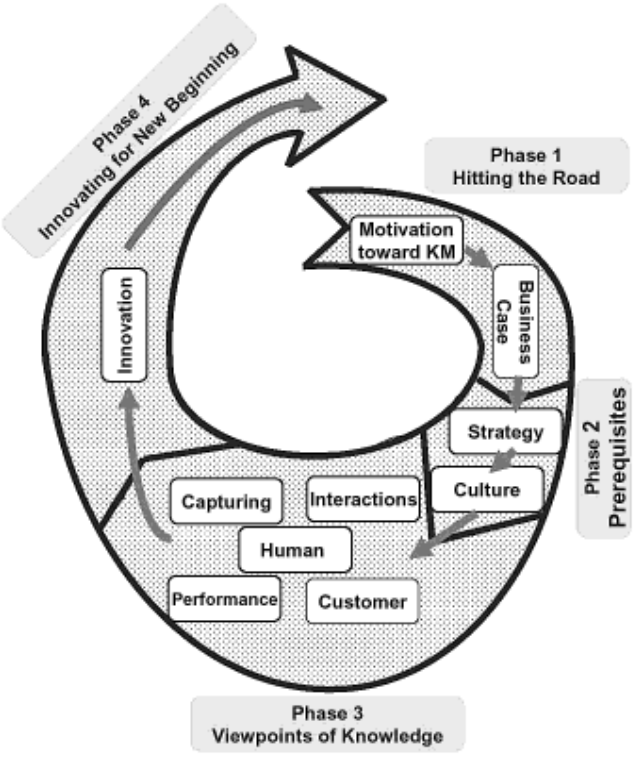
transfer.

Concluding, it is possible to argue that companies must move their focus from documents to discussion and from velocity to viscosity. Only in this way might it be possible to have useful and high quality knowledge transfer, particularly of embodied knowledge, which has created major problems in terms of generation, codification and transferral, but which, on the other hand, can create new ideas, stimulate innovation and give the company a distinctive competitive advantage.

1.2.3- The knowledge management journey

In their book entitled "The Complete Guide to Knowledge Management: a Strategic Plan to Leverage Your Company's Intellectual Capital" (2011), Pasher & Ronen analyse knowledge management differently. Their aim is to link strategy and knowledge management, and to discover how to develop a knowledge culture that constantly creates new knowledge. The figure below gives a graphic presentation of what they call the "knowledge management journey".

Figure 7: The Knowledge Management Journey



Source: Pasher & Ronnen (2011)

This model is structured into 4 phases in a way that should help managers to *"understand and implement a systematic and comprehensible knowledge management process"* (Pasher & Ronner, 2011, p xiii). The spiral form emphasizes the continuous, never-ending process. In order to achieve a shared understanding it is important to note the authors' definition of knowledge: *"experience and expertise that, when combined with basic data and information, can solve problems and create value"* (Pasher &

Ronner, 2011, p xvi). However, not all the points mentioned in the definition have been taken into consideration since the authors decided to focus their attention much more on the intangible, abstract and tacit part of knowledge management.

In their book they often talk about intellectual capital. Before examining the individual elements, it is perhaps advisable to explain what the authors mean by this term:

- the skills and expertise of a company's human resources;
- the extent and financing of its R&D investments;
- the efficiency of its existing and potential work processes;
- it's IT infrastructure and customer base.

The following paragraphs describe this knowledge management process by highlighting the most critical elements of each step of the spiral.

Phase 1: Hitting the road

This section will first illustrate some of the challenges linked to tactical and strategic knowledge management issues, before presenting the reasons that should motivate managers to invest various resources (time, money, human resources, energies, et.) in intellectual/knowledge assets.

- *The **motivation** toward knowledge management*

Knowledge, and particularly embodied knowledge, is considered to be one of the most important assets for all types of modern organisations, and must therefore be shared between multiple actors in the organisation. Knowledge is meaningless if it is held by one single person because if this individual leaves the company her/his entire set of knowledge will also be lost.

The authors also point out the importance of coordinating strategy and knowledge management activities. These two activities must be developed and maintained simultaneously. Unfortunately, however, managers often find it difficult to think outside the box and they therefore address resources toward developing something new.

From a *tactical* aspect the authors identify four questions that should help managers to define the knowledge management issue:

- How can an organisation enhance its knowledge creation?
- How can it preserve its existing knowledge?
- How can it encourage its knowledge sharing?
- What are its most efficient methods of knowledge dissemination?

Tactical issues are important aspects and most managers are initially exposed to knowledge management through these factors. However, these elements do not cover the strategic aspects, which are essential because they link the tactical part with the strategy. In relation to this, the authors also

defined four further questions, which will guarantee the development of an appropriate and efficient knowledge transfer strategy.

- Are the culture and values at an organisation right for a properly knowledge-expert organisation?
- What are the knowledge assets of the organisation?
- How can the organisation leverage its assets for better results?
- How can it increase its assets in the long run?

Answers to these questions ensure that the strategy will be oriented toward the new, and they are primarily important in terms of turnover and restructuring. According to the authors, tactic implications should be derived from a strategic proposition.

Strategy and knowledge management should generally lie in the managerial sphere (at all levels), since these figures must promote this process, and be a catalyst and leader of it, while also taking into consideration all the ideas coming from the bottom of the hierarchical structure. The process of creating, sharing and capturing knowledge is and must be repeated and refreshed continuously.

- *Making the **business case** for managing intellectual capital*

The main topic of this sub-chapter will be the construction of a business case that will convince top managers to invest resources in intellectual capital, despite the fact that this resource is intangible and does not appear in any financial report.

Intellectual capital is a basic asset for a knowledge intensive business and in some cases can save companies in a critical situation. For example, in 1990 Skania AFS was losing money and the management decided to liquidate the company; however, something intangible was moving behind the financial reports. They made many investments, including:

- recruiting talented employees;
- working on developing a long-term business strategy;
- rapidly increasing the customer base;
- improving the work processes;
- implementing extensive information technology capabilities.

After some suggestions the Board decided against liquidating the company and, in fact, within two years it had returned to profitability and had begun to grow. This example shows that investing in knowledge can have a long “return of investments” period.

In order to concretely estimate the value of intellectual capital it is possible to assume that the intellectual capital of a company consists of its global market value (100% of the company value) minus the book value (financial indicators measuring tangible assets). This subtraction will give an approximate indication of the value of the intangible assets owned by the company.

The two authors divide the concept into two elements, providing a better understanding of intellectual capital:

- human capital: knowledge and skills of the individual employees;
- structural capital: organisational capabilities that support the employees' productivity.

A good example of IC management is the "balanced scorecard", which encourages the managers and the company to look after their IC. They structured the model around 4 elements: financial – customers – internal processes – innovation and learning. The last point in particular considers the intangible assets of the company. The advantages of the "balanced scorecard" is that it uses the organisation's own strategy as a basis for constructing indicators that will allow the board to monitor the firm's development.

It is possible to assume that IC indicators could have helped to prevent or at least to alleviate some of the implications of the most recent two economic bubbles.

We are now moving to the second step of the model, the one that will analyse the prerequisites, including strategy and culture.

Phase 2: Prerequisites

- *The importance of **strategy** in knowledge management*

The following paragraphs will discuss the importance of the interrelationship between strategy and knowledge management. First of all, knowledge management requires its own strategy, secondly the corporate strategy must also be built onto the knowledge management topic, and thirdly, the board of the firm must take the good knowledge present in the organisation and use it to achieve their strategic goals. If a company does not have a successful knowledge management process, it will be less likely to develop an appropriate corporate strategy.

In the current and increasingly turbulent economic climate, companies must consider the fact that core competencies are more sustainable than products and services. Managers must then analyse their business and their own knowledge, identifying the core competencies and the path to further development and exploitation. Later, once the development phase has been completed and the product/service has begun to be sold to customers, they automatically create new opportunities for improvements, and new knowledge will be absorbed by the company.

Managing knowledge means that the company knows what it needs to know, what are the priorities and the most important aspects. Interventions on knowledge management should be introduced only once the firm has drawn up an overall view of a knowledge-managing organisation. In other words, according to the authors it is possible to argue that managers should: *"First decide what the organisation needs to know, and then move to designing how to develop the organisational knowledge".* (Pasher & Ronen, 2011, p 39)

It is possible to identify two main strategic directions: the first starts with the product, in order to develop their knowledge and the strategy. The second type aims to first create knowledge and share technological breakthroughs, before developing the strategy and then translating these breakthroughs into new and marketable products/services.

Drawing up strategy, understanding yourself, assessing your strengths and weaknesses requires courage to look in the mirror and honestly judge what you see. The company, and all collaborators, must have good knowledge of themselves, otherwise it would be impossible to build a concrete and useful strategy. For an organisation this also means listening to as many sources as possible, both external and internal. One example of internal knowledge exploitation is Arkia, a sizeable Israeli domestic airline, which decided to involve their employees as much as possible in drawing up the strategy and in developing innovations: *"if you sleep, you do not innovate, if you do not innovate, you die (…) we should listen to employees and we designed a knowledge café (…) thanks to the ideas of the employees who know the company best, Arkia became the biggest tourism company (…)"*

Fundamental is the fact that the strategy must be revised continuously, by comparing the new situation (economical, social, of the employees, new knowledge acquired, etc.) with the past and with the future goals.

Hypothesis 6: *Firms from Southern Switzerland involve employees (not managers) in the elaboration of the strategy.*

This sub-chapter describes the second prerequisite for knowledge management, where the focus is on creating a proper culture.

- *The role of **culture***

Forty years ago, or even more recently, company management teams did not try to establish a proper culture, but the modern knowledge economy requires some adjustments. It is essential to construct a culture facilitating knowledge sharing and efficient knowledge management in general. According to the authors: *"working toward common values in which one believes and with which one believes and with which one identifies can be an important source of motivation for workers in a common corporate culture"* (Pasher & Ronen, 2011, p. 53).

The authors maintain that culture consists of three main blocks: beliefs, values and behavioural norms. These three elements are embodied in people and can be influenced. Trust, rather than hierarchical command, fosters respect for workers and they will consequently be more willing to share their knowledge with other people and with mangers. Conversely, the company could risk losing some of its best knowledge because people who do not trust the company and its management will keep some information to themselves as power forces: they are scared that if they share their knowledge, they will make themselves redundant. To sum up, it can be argued that an authoritarian and hierarchical

management style is unhelpful for any knowledge management culture. It is may possible to assume that knowledge management and a common culture must have a win-win environment, where managers and employees believe in the same mutual benefits of knowledge and are both willing to face the challenge of sharing and creating something together. Trust between parties will help them to see the win-win situation because they will share knowledge, in the understanding that everyone in the company will benefit from it.

Hypothesis 7: *Firms from Southern Switzerland have horizontal hierarchical structures.*

In many western companies manager suggestions are perceived as direct orders that cannot be discussed or influenced. Conversely, in other (geographical) cultures (i.e.: Japanese or Israeli), the workers consider managers' decisions as simply suggestions, which they can influence and automatically improve: they believe that this is part of their mission.

A proper knowledge-oriented culture should generally be oriented toward the people, treat them well and empower their capabilities. It is then important to emphasise that each organisation must customize its culture and values in order to promote knowledge management in the light of its unique features, history, geographical area, regional culture, regional religion, etc.

Another relevant element of a knowledge management journey is the resources that the board of the firm must invest (e.g.: space, time, money, etc.). This point is generally important for all knowledge management related activities because, as already mentioned, these activities take place informally and people must therefore have access to resources (cited above).

Hypothesis 8: *Firms from Southern Switzerland give resources (time and space) to collaborators, enabling them to share knowledge and to establish a proper organisational culture.*

Concluding this sub-chapter, it can be said that a knowledge-sharing culture is built on 4 main blocks: respect for workers' knowledge, trust, innovation and the perception of a win-win situation. These elements must be managed, trying to understand the optimal balance between control and freedom. The last point highlights the importance of the role of the manager, who, together with the collaborators, is responsible for instilling the culture and values that promote and support knowledge management.

Phase 3: Viewpoints of knowledge

We now move to the third block of the "knowledge management journey" drawn up by Pasher & Ronen (2011). This section presents critical viewpoints that should be considered for any knowledge organisation.

- *The **human** focus*

According to the authors (Pasher & Ronnen, 2011), knowledge workers are the most important concept of knowledge management and they must understood and managed.

Managing these "special workers" has numerous implications in many activities conducted by human resource management: recruitment, retaining, development of skills/potential, encouragement to create and share knowledge. Not all employees are knowledge workers, the people who usually look for ways in which to solve problems creatively and who are more active than "normal" workers. Managers must focus on these important sources of knowledge, giving them freedom and also some decision-making power.

Prior to the first bubble crisis managers were not much concerned with the importance of knowledge workers, who often left traditional firms because they were attracted by the new start-ups which guaranteed them higher salaries and more interesting jobs. "Old" firms lost a great deal of intellectual capital but during the crises new firms went down and larger, more stable organisations came out in a powerful position vis-à-vis the workers. According to the authors, two main lessons can be learned here:

- employees now have a better understanding of the advantages of working in stable organisations as opposed to volatile start-ups;
- organisations have learned to keep investing in their employees, in both good times and bad.

"Knowledge workers are the main assets of the organisation and are not easily replaced (...) You cannot force KWs to stay, but you must make them want to stay. This is a difficult mission for managers." (Pasher & Ronen, 2011, p. 72). Knowledge workers must gain something; they will probably engage for passion and personal interest but, at the same time, they will not work as volunteers and will therefore certainly look for some form of payback, monetary or otherwise.

During the second bubble many companies had already learned a lesson from the first crisis and therefore tried to take advantage by recruiting some high-profile knowledge workers who were leaving less successful companies. In order to convince talents to remain in the company, managements must understand the job satisfaction elements, and the most important of these elements. Rafael Advanced Defence Systems Ltd., an Israeli company, has drawn up a list of the various elements of job satisfaction and their relative importance. They have identified the four main origins of satisfaction:

- 1: Interesting and challenging work;
- 2 Professional and/or managerial development;
- 3: Salary with respect to the market;
- 4: Performance-based recognition and promotion.

A company must keep in touch with knowledge workers who leave because they will probably be able to share their knowledge and experience also once they have retired. These people are usually engaged as consultants.

Knowledge workers are often willing to take on managerial positions, although, in some cases, when the knowledge worker has a very specific/technical base, it might be better to involve her/him in a sort of job rotation. By doing so s/he will acquire all the knowledge needed to manage the company or at least a part of it.

Hypothesis 9: *Firms from Southern Switzerland give their employees the opportunity for job rotation.*

This topic can again be related to the importance of preventing knowledge from being conserved by the veteran, and at the same time these experienced knowledge workers must be encouraged to share their experience with less experienced people. In order to monitor the situation, regular meeting should be held between management, experienced knowledge workers and new knowledge employees.

The creation and the exchange of knowledge must be rewarded. Examples of compensation typologies include:

- bonuses: shared between knowledge creators;
- access to data and knowledge of others;
- promotion;
- community membership;
- establish a personal reputation among peers;
- personal gratification from helping others.

Hypothesis 10: *Firms from southern Switzerland give rewards to employees who create or share knowledge.*

Knowledge workers and human focus play an important role in the process of knowledge management, and the firm's board must ensure their development and satisfaction, allowing them to grow and making them loyal to the company.

- *Managing **interactions** for knowledge creation and sharing*

Making people interact with each other is a fundamental step in the knowledge sharing process. This activity is especially important because, firstly, it allows people to share ideas (mainly tacit knowledge), and secondly, it also generates new ideas. It is possible to depict this situation mathematically: 10 apples + 10 apples = 20 apples, while 10 people sharing knowledge + 10 people

sharing knowledge > 20 "knowledge" pieces because interaction generates knowledge and ideas that would not have emerged if people had been engaged purely in tasks.

Learning, collaboration and innovation are social processes that can be also called "Communities of practices". According to the authors, these are: *"networks of people who have common interests, share a field of specialization, have known each other over a period of time, and trust each other".* (Pasher & Ronen, 2011). Davenport and Prusak (1998) identify this group of people as a completely informal and natural community, not forced and not created by the management. Pasher & Ronen (2011) also identify the possibility of being formalized and organized but groups of this type might be difficult to identify and manage. In any case, this interaction must be promoted and facilitated, so, as mentioned above, the management must invest and provide resources such as time, spaces, capital, etc.. The time that a collaborator spends in the firm must be well managed, in the sense that the management must find the right balance between solo and communal time. Both extreme situations (too solo – too social) are unhealthy for the company because, too solo means no interaction and no knowledge sharing, while too social makes people influenced by the other people's opinions.

Creating communities of practice can be stimulated by what are known as "cake meetings", when people interact on a topic in a completely informal way. These moments often produce more and better results than formal management/staff meetings; of course, voluntary contributions are welcomed and needed, and all the participants in any community of practices must respect and benefit from different/opposing opinions. In order to truly benefit from these interactions, the management must first identify existing communities of practices and then try to motivate collaborators to build other groups in order to fill in the missing gaps. Related to this element, it is very important that a brake is not put on the dynamics and interaction that already exist.

Formal meetings can play a fundamental role in the development of a company. This terminology came originally from the US army, which applies it to after-action meetings, when all the soldiers and officers involved in a military operation must express their own opinions and points of view regarding the positive and the negative aspects of the action.
As in any army, or in a private company, or in a good application of this model, it is important to establish a good environment where people feel free to express their opinions .
The output of such meetings is information (feedback and results), which will be useful for: understanding if the main goals have been reached, improving further projects and systems for avoiding repeating the same mistakes. This learning could be also codified and transformed into procedures, which can help the firm to improve its project management.

If interactions are to be useful they must be effective and the authors (Pasher & Ronen, 2011) suggest some methods that can facilitate the process:

- Facilitation of meetings: a professional facilitator, familiar with the topic of the interaction, can to ensure a proper environment. The active influence of managers is not recommended.
- The physical environment: this topic has already been mentioned several times in this paper, but it is a fundamental element fostering connectivity and positive interactions between people in a community of practices.
- The knowledge café: a meeting format that is designed to promote knowledge creation and sharing. It is an informal meeting where a topic is discussed with the benefit of multiple perspectives.

ICT can make a positive impact on interactions but it must be supported by an organisational culture promoting knowledge culture. However, it can facilitate interactions and knowledge exchange worldwide and between thousands of people (e.g.: video conferences), something that is not possible with face-to-face meetings alone.

Managing, or rather facilitating, interactions is a process that every knowledge organisation must have. Investing and promoting the appropriate culture and values is the basis for generating communities of practice, a starting point for creating and spreading tacit knowledge inside the company.

- ***Capturing*** *and* ***reusing*** *existing knowledge*

This chapter will complete the previous one. The logical consequence of creating new knowledge is that it needs to be captured and used so that it will be advantageous for the entire company. Mentoring, apprenticeships, workshops, lectures and continuing education courses are all activities that can facilitate the reuse and new use of knowledge; of course, these activities require the investment of numerous resources (people, money, time), but these investments might generate a great benefit for the organisation as a whole.

All knowledge organisation systems must develop efficient methods of capturing knowledge and making it available to all potential users.

As already mentioned by Davenport & Prusak (1998), it is important to design a knowledge map, that will allow the management to identify what knowledge is owned by whom, and consequently where it can be applied and used for the benefit of the company. Knowledge, and tacit knowledge in particular, often only exists in people's minds and will not be available to all. A wiki-style platform might help to solve this problem by accumulating, accessing and updating data.

Mentoring and apprenticeships are indispensable activities, where the one-on-one situation plays a central role. Once involved, the participants can gain from the experience of other workers/collaborators who have greater knowledge in the specific field. Davenport and Prusak (1998) discuss the role of mentor; according to them and to Pasher & Ronen (2011), a newcomer must be

assisted by a mentor, who will help the novice to perform tasks in order to introduce her/him to the new job.

Hypothesis 11: *Firms from Southern Switzerland give new employees the opportunity to gain knowledge from experienced workers.*

Knowledge can be disseminated by means of lectures and workshops, which can be conducted from inside the organisation as well as from outside the company's boundaries. There are advantages and disadvantages to both types: external contributions might give new input, while internal lectures/workshops can give additional benefits of codifying existing knowledge. According to Pasher & Ronen (2011) there are some elements that make the lectures or workshops succeed:

- Offering valuable and unique content: internal or external experts, who will add value to what is normally known or written in text books.
- Conducting lectures in an interactive format: half of the lecture dedicated to formal style (frontal) and the rest devoted to a question-and-answer session.
- Ensuring that the subject is relevant: the topic discussed should be potentially interesting for the audience.
- Providing professional participation: both the organisational staff and the lecturers should be professional prepared.

The following chapter will discuss the importance of interaction with customers; this will not be a central topic of the study because it focuses on an external source of knowledge, but it should be taken into consideration, perhaps for a future research project.

- ***Customer*** *focus*

In today's world people and, in our specific case, customers are willing to be questioned about their own opinions, thoughts, expectations and feelings; the final result should be to "know what they know" (Pasher & Ronen, 2011). Also in this case one of the best ways in which to interact with clients and try to share their knowledge with the company is through informal meetings, where the customer, for example, can visit the organisation, eat a snack and spend few hours with some people from the management team. These moments must be viewed as strategic meetings and not simply as day-to-day interactions. Unfortunately, many companies spend a lot of money on expensive market research, which may give some information, but it is difficult to understand what the client really thinks. With formal types of research the threat is that the problem might be understood, but not the reasons why it arose. Some companies involve customers in workshops, even those oriented toward strategy development; here their knowledge will assure top management that the strategy respects the clients' point of view as well.

All meetings, formal and informal, must be well planned; for example, the environment plays an important role because creating a positive atmosphere will enable customers to speak freely.

This interaction also involves a win-win situation, because customers will talk about their needs, ideas, interests, and the company will consequently acquire information about them, and the firm will directly improve its product/service as a result of the inputs given by the customers.

Measuring proper knowledge is an important but also a "not easy task"; the next chapter will discuss this issue, with focus on the measurement of its effectiveness.

- *Measuring and managing the **performance** of proper knowledge work*

"If it can't be measured, it can't be managed" (Pasher & Ronen, 2011). This cliché is generally true and refers to the importance of identifying/developing tools that can measure the knowledge work and the creation of intellectual capital. Unfortunately, accurate instruments for evaluating intangible assets have not been sufficiently developed. A company can "measure" intellectual capital by subtracting, from the annual earnings, the customary yield on the physical assets of the industry. Another solution could be to develop a management tool consisting of a structured set of indicators: for example: the "balanced scorecard", which translates the firm's strategy into indicators.

Another framework for "intellectual capital" management is the "Navigator", a system that competes with that of the balanced scorecard, and that bases its analysis on 5 main elements:

- financial focus: classical financial information (e.g.: sales, profits, etc.);
- customer focus: understand the customer flow and point of contact (e.g.: number of contracts, number of points of sales, etc.);
- human factors: identify data about employees and their development (number of employees, training expenses, etc.);
- process focus: competencies that remain in the organisation when employees retire. (e.g.: processing time, number of contracts per employees, etc.);
- renewal and development focus: this element is strongly related to the expected results, to innovation and to the future development of the company (e.g.: premiums from new launches, percentage of staff under 40).

Like the balanced scorecard, the Navigator derives from the strategy and follows the following development process:

Mission and strategy → Key success factors → Indicators → Actions

Working in this way, a knowledge organisation, which has certainly integrated some knowledge aspect into its strategy, will be able to monitor the progress of its knowledge assets. However, it will still always be difficult to determine the real value of a company in terms of the total sum of assets

(tangible and intangible), so all these tools can help the management but will not give an exact idea of the real value of the intangible assets.

Although new accounting methods aiming to assess the monetary value of intangible assets have been developed in the last few years, few firms are willing to use them because they still seem rather inaccurate.

This chapter concludes the third phase of the knowledge management journey dedicated to "viewpoints of knowledge". The next phase will analyse "innovation", the interaction between this topic and knowledge management, and innovation as an instrument for a new beginning.

Phase 4: Innovation for new beginning

- *Innovation*

According with the authors (Pasher & Ronen, 2011), innovation consists of three components:

- Reuse of existing knowledge: use the current knowledge in a different way
- Invention of new knowledge: increase the current knowledge assets through training, hiring new collaborators, creativity and exploitation of the tacit knowledge of the workers
- Exploitation of overall knowledge: use all the knowledge available to the firm's environment, both internal and external.

Furthermore, before analysing the topic, it is important to emphasise that innovation is not limited to technology but also applies to all business activities, and that both types of innovation result from knowledge management, where the interaction of tacit and explicit knowledge plays a fundamental role.

In today's economy renewal has become a fundamental element for the survival of a company, even or especially in an economically difficult period. Companies must understand that innovation is not "manna from heaven" but needs to be seen as core value of the business, and that innovation methods are required. It also plays an important role in strategic discussion of the core business. Knowledge management is considered to be an innovation enabler because this managerial activity alone can create new ideas, enabling experiments to test these ideas and implementing the promising ideas and ventures.

Before developing any innovation, the board must be sure of its value, and in order to understand this the company must listen to many opinions, both internal and external. This point is very important because it will be useless to invest resources, develop a product/service or a business change that will not be applied, used, appreciated or acquired.

The authors express two requirements that are fundamental for the correct development of an innovation:

- The need for frequent discussions: many companies try to conduct as much discussion as possible, through meetings (formal and informal), workshops and other moments of interaction.
- The need for multiple perspectives: different points of view are fundamental but must be stimulated and encouraged through a correct environment and dynamic management. It is important to analyse the variables: age, background, experiences, culture, gender, etc..

Innovation can be seen as the peak of a correct knowledge management process, the final phase of the knowledge management journey. Since the model has a spiral structure, this is not the conclusion but just a new beginning.

Implementing knowledge management – A step-by-step process

In the last chapter related to this book the authors present a "step-by-step process" for implementing knowledge management. It is structured into 5 main steps and a number of guidelines must be followed.

Firstly, the guidelines for knowledge management practice are:

- always practice from a strategic aspect;
- utilise principles of intellectual capital;
- constantly keep an emphasis on innovation.

A manager will now ask "but how can I do it?" and the authors (Pasher & Ronen, 2011) answer:

- The vision: the important role of knowledge management must be highlighted in the vision, so the management must have an in-depth understanding of the organisation's identity, strategy and culture. Knowledge management must contribute to the company's core business and only in this way will the management be able to share its enthusiasm with the workers.
- Assess your organisation: an initial assessment might be a good idea in order to understand the current state of knowledge management. It might be useful to then set goals and objectives for future activities.
- Derive intellectual capital goal: some indicators must be selected in order to derive intellectual capital goals that will help the management to make some long term commitments and that can be facilitated through systems such as the "Navigator" or the "Balanced scorecard". Indicators must be chosen very carefully and they must be realistic and not too complicated.
- Begin with pilots: after having developed a vision and objectives oriented toward knowledge management, people must now be involved as pilots, who will be in charge of promoting interactions and other knowledge sharing activities. They will act as sparks setting off the "knowledge" fire inside the company.

- Start small: it is advisable to start with a small, carefully selected project. These assignments will generally have high potential contributions and are likely to be successful; both points will motivate the entire organisation to participate in other projects and will increase the energy level of the knowledge management process.

Who will be involved in this process?

- The initiator: may be member of the board, a manager or even an external expert. However, s/he must be passionate about the topic and able to sell the concept effectively to senior managers.
- Chief knowledge officer: has the role of introducing the importance of knowledge to the entire organisation and then managing it. This function is usually limited to large firms.
- Consultants: will not manage knowledge inside the company, but will generally catalyse and bring external and new perspectives through their experience. They can be internal workers with external experience or they can be hired from outside the boundaries of the firm.

Knowledge management will be the type of implementation that involves many people and many resources. However, this step-by-step process will help the management to introduce the topic and to apply it in the organisation, making it an *"inseparable part of the organisational culture"* (Pasher & Ronen, 2011, p. 184).

The "knowledge management journey" has been described in order to help managers to implement a spiral dynamic of knowledge management, from the starting point of *hitting the road to knowledge management* to the *prerequisite* for all knowledge firms, going through five *viewpoints of knowledge* and concluding with the final goal: *innovation for new beginning.* Its "never-ending" structure will guarantee the company a process of continuous improvement and an implementation that will consider every single idea and feedback in order to develop a strategic plan to leverage the company's intellectual capital.

1.2.4- The APQC model

How should the knowledge flow? This is a question that will be answered by the APQC model.

APQC stands for "American Productivity and Quality Centre" and is a non-profit research firm with 20 years of experience in knowledge management benchmarking, best practice and implementation. In their book entitled "The New Edge in Knowledge" (2001), O'Dell & Hubert aim to allow organisations to achieve great results in knowledge management and, at the same time, to *"provide the strategic principles to help you do the same in any organisation"*. (p. xiii)

This chapter focuses specifically on the APQC knowledge flow process developed by the organisation itself. In this perspective, the knowledge about the company must travel around the organisation, so the model was constructed with the goal of creating business value by means of a circular flow, similar to a step-by-step process.

The figure below gives a graphic representation of the model, which was also used as the main structure of the questionnaire. The following paragraphs provide a brief description of the process, going through the individual points. The starting point will be knowledge creation, and the flow will be concluded by using that knowledge in order to improve the company's assets and to innovate.

Figure 8: The APQC Knowledge Flow Process

Source: Reworked from O'Dell & Hubert, 2011

Step 1: Create

This first phase is related to the development of new knowledge, which is normally created daily in many different ways: interactions, experiments, new strategic customer care plan, new inventions, etc.. Knowledge creation should not be viewed as simply a result of the R&D department, but also as what is created during normal work, meetings (formal and informal) and other forms of interaction.

Step 2: Identify

Try to locate the new and the existing knowledge. Here *knowledge maps* can help to identify the most critical and important knowledge. If this is not done, the organisation will encounter some problems: firstly, people with knowledge may not realize that others might find it useful; secondly, people who are looking for some knowledge do not know where to find it or perhaps might not even know that it already exists inside the organisation.

Step 3: Collect

The identified knowledge should now be collected, captured and stored in order to be useful; this last activity, as already seen in previous theories, is not the easiest one, particularly when tacit knowledge is considered. This phase is very important as well as very difficult; people often write down too much or try to collect knowledge in a confused fashion that can lead to misunderstandings and a lack of clarity.

Step 4: Review

In this phase the knowledge is collected evaluated, validated or analysed. The management will examine what has been done, decide if the knowledge is useful and in which ways the company can benefit from it. The lack of time between the collection and the final acceptance might often cause problems in terms of understanding, and it might therefore happen that great and significant knowledge is rejected while less interesting knowledge is then accepted and used. Managers must focus on this element and try to narrow the gap between the two phases.

Step 5: Share

This means distributing knowledge around the company and passing it on to others. Sharing usually takes place through interactions so the culture and the environment therefore play a fundamental role because people are likely to interact and, consequently, to share knowledge with people they know, respect and like.

Step 6: Access

This phase is characterized by finding or downloading the best knowledge assets from *"one to one or one to many"* (O'Dell & Hubert, 2011, p. 31). The knowledge process must be consequent: when an employee possesses a knowledge asset, s/he must dispose of many resources (money, time, space, etc.) in order to pursue and study it in sufficient detail in order to make it useful.

Step 7: Use

The knowledge "acquired" is applied to a situation in order to solve a problem, improve a process or make a decision. During this phase it is important that the entire company accepts the mentality of sharing and prevents the possibility of collaborators failing to accept knowledge assets from new sources because they believe that their personal expertise and knowledge is sufficient or perhaps the best.

The APQC knowledge flow process can also be viewed as a starting point for developing a knowledge management strategy because it enables the board to paint a complete picture of the knowledge movements, allowing the management to identify the company's deficiencies and needs in terms of becoming a knowledge organisation.

The APQC knowledge flow concludes the presentation of the theoretical approaches included in this study. The following chapter aims to identify the main points that have been discussed in the previous pages; in other words I will briefly create a model incorporating the elements most discussed by the authors.

1.3- Tacit knowledge: a personal perspective

In this part I will identify the concepts that, from my point of view, are generally discussed in the different part of the theoretical approach. In other words I would like to give my personal opinion about tacit knowledge taking as reference the theoretical perspective just seen. I identified four main areas that need to be taken under account: knowledge about knowledge, important practices, tacit knowledge management and what is the final end (goal).

Knowledge about knowledge

In this part I will briefly present the different perspective of "knowledge about knowledge", that means to know which are the main points of view about the different types of knowledge: tacit and explicit. Many authors have presented their point of views (Nonaka & Takeuchi; Lundvall & Johnson; Rowley; Ackoff & Zeley & Cleveland). For my thesis I decided to focalize my attention on Nonaka & Takeuchi and consequently on "tacit and explicit knowledge". That for the main reason that the element presented in their perspective are then also present in the other theoretical perspectives.

- Explicit and tacit knowledge

According to Nonaka & Takeuchi (1995) it is possible to identify two main types of knowledge: tacit and explicit. This taxonomy will be largely used during the entire project. As already seen the authors identify the two categories as following: *tacit knowledge* as: *"high personal and hard to formalize, making it difficult to communicate or to share with others. (…)It is deeply rooted in an individual's actions and experience, a well as in the ideals, values, or emotions he or she embrace"* (p. 8); *Explicit knowledge* as: *"something formal and systematic"* (p. 8)

Important practices

From my point of view some practices are very important for firms that look to become a knowledge company. Here I list the activities that I have found interesting reading the theories and that I partially used in the questionnaire for my regional analysis.

- Interactions (informal) have to be promoted and facilitated

Informal meeting, are the moments where people really feel free to express their knowledge and experiences and, because of that, they have to be promoted and facilitated by the management. Create networks between employees of the same or different departments might help the management to promote informal interactions. At the same time such moments need resources: time, spaces and

sometimes also money, however these have not to be seen as costs but investments because interactions can cultivate socialization, trust, maybe friendship, which will consequently motivate people to share their embodied knowledge and their experiences.

- Transfer (eg. between young and experienced)

The exchange of knowledge (in this specific case tacit knowledge) is one of the most important thing in knowledge management and the management needs to care about that. For example: if not transferred between different workers-generation, tacit knowledge will have little sense. It is important that experienced workers pass their knowledge to new employees. The easiest way is to put the two types of collaborators working together, this will facilitate the exchange of tacit knowledge and experiences accumulated during the work-life of the "old" one.

- Cultural aspects → Trust & Freedom to express the own opinion

Another important element that can improve tacit knowledge management is the organisational culture that needs to be knowledge and knowledge-sharing oriented. A culture that promote competitiveness between employees, or that keep the different hierarchical levels strongly separated, will hardly stimulate people to interact or to share moments outside the workplace. While a culture that stimulate interactions will be much willing to promote a certain sense of trust and employees will be likely to network and be more open-minded to integrate differences, both different ideas and people from different culture.

- Motivation

Employees have to be motivated in order to create, share and use new knowledge. All the aspects seen above go in this direction and can be applied. However, from my point of view, incentives, especially when these activities/culture are/is just introduced, can contribute to a major motivation from the employee side. The incentives can have different form: monetary, free time, promotions, etc.

Tacit Knowledge management

Reading all the theoretical perspectives it appears evident that tacit knowledge needs to be managed. With the next points I am going to present the elements that, from my point of view, are important for a company that is interested in managing tacit knowledge.

- Involvement: strategy → knowledge workers

Knowledge workers are an important source for every company. Their knowledge and their capabilities is/are a resource that any firms' management have to identify to manage and to exploit. An example, also investigate in the questionnaire, could be to involve knowledge workers in the elaboration of the strategy. This practice is something that will guarantee to the company different points of view, from a general to a technical/specific perspective.

- Knowledge map

Identify, detect and find out who have which kind of knowledge, is directly linked to the topic "management". The top management should think that the elaboration of a "knowledge map" might help to know where to go to find specific information or to dispose of a particular knowledge. It could be structured as an organizational chart, in order to easily identify where the knowledge researched is placed, who is the person that "own" it. In a further analysis it can also help for creating a point of departure for coordinating activity of knowledge sharing between employees.

- Structured or not structured activities

Activities, which aim to create, share or utilize embodied knowledge can have different forms but one of the most important differences are related to the fact if they are structured or not. Generally is recommended to leave these as much unstructured as possible, without any external (eg. from the management) influence. However some structure is needed, for example a main organisation is needed and the management, during the activity can also play the role of facilitator. To better explain I would like to present some examples:

  - Full structured activity: a classroom lecture, where the teacher/manager presents his concepts without any interaction from the audience.
  - Semi structured activity: workshops managed by the participants, where the managements play just the role of organizer and facilitator.
  - Unstructured activity: give space, time and a goal to the employees and then they will self-manage the resources they dispose to reach the final aim.

- Keep the right people and make them growing

Knowledge workers and other employees with particular capabilities are important resources for every company and consequently they have to be motivated to stay in the firm and to acquire even more knowledge. The management of the company have to create the right environment that bring these collaborators willing to stay and to work for the benefit of their company. Here we can also relate to the importance played by the exchange of tacit knowledge between experienced worker and new employees. This practice is fundamental and plays an important role for these companies that do not want to lose their embodied capabilities. From my point of view the two generations of workers have to stay as much time as possible working together sharing experience and tacit knowledge before the "old" worker leave the company because of retirement of changing job.

What is the final end?

Create, share and use tacit knowledge must have a final goal in a company if not it will be no-sense to invest all such resources in knowledge management practices. Here I will present two of these goals that, from my point of view, are very important.

- Never ending process

The most of the model seen have a circular form and consequently it means that they are a never-ending process. This dynamic approach gives the idea of a continual improvement that can give to the company a positive trend. If this aspect can then influence or be translated for all the managerial activities it will be able to positively influence the entire organisation. It is than possible to say that the aim of tacit knowledge management is to bring employees and their knowledge in a process of continuous improvements.

- Innovation

Innovation is not just the aim tacit knowledge management but also the goal that the majority of the companies try to achieve through many activities and practices. Tacit knowledge management is one of the source of ideas that can be translated in invention/organisational changes that if put into the market/applied can be turned into innovation. In the fast changing business world of today, innovation has become the mainstay of every organization. "*The nature of global economic growth has been changed by the speed of innovation, which has been made possible by rapidly evolving technology, shorter product lifecycles and a higher rate of new product development. Organizations have to ensure that their business strategies are innovative to build and sustain competitive advantage. Innovation has, however, become increasingly complex due to changing customer needs, extensive competitive pressure and rapid technological change (Cavusgil et al., 2003). The complexity of innovation has also been increased by growth in the amount of knowledge available to organizations as basis for innovation. Innovation is extremely dependent on the availability of knowledge and therefore the complexity created by the explosion of richness and reach of knowledge has to be identified and managed to ensure successful innovation."* (Adams & Lamont, 2003; Cardinal & al., 2001; Darroch & McNaughton, 2002; Pyka, 2002; Shani & al., 2003).

2- Contextualisation

Before examining the analysis of the questionnaire results, I think it is important to contextualize the region that has been considered for the empirical part of this thesis.

Southern Switzerland was selected for two main reasons: firstly, because this is the region where I have lived all my life, and secondly, because I currently work in this context and am therefore interested in understanding how "my region" manages its own resource, particularly in terms of tacit knowledge management.

2.1- Southern Switzerland (Ticino)

The next new pages will introduce readers to this particular situation, taking them on a visit to the Southern Alps. Not all parts will be fundamental for achieving the goal of my thesis but they will be useful for forming an impression of the region in question.

2.1.1- Geographical

Source: www.google.com

Switzerland lies at the geographical heart of Europe, surrounded by Italy, France, Germany and Austria, extending north and south of the Alps and comprising a variety of landscapes.

The population amounts to approximately 7.9 million, marked by four different languages and cultures: German (63.7%), French (20.4%), Italian (6.5%) and Romansh (0.5%).


Source: www.google.com

Switzerland is divided into 26, partially independent Cantons: *"The Swiss Federal Constitution declares the cantons to be sovereign to the extent their sovereignty is not limited by federal law"* (Historical Dictionary of Switzerland). The analysis part of the thesis will focus "Ticino", the only Canton where the entire population speaks Italian. The southern border adjoins Italy and this situation defines both the economical and the cultural realty of Ticino.

Source: www.google.com

The Canton is divided into regions (districts): Mendrisio, Lugano, Locarno, Bellinzona, Riviera, Vallemaggia, Leventina, Blenio. The last three regions are not heavily populated because they are mainly Alpine areas.

In view of the percentage of answers to the questionnaire, I decided to divide the Canton into 3 main regions: Mendrisio, Lugano and "Sopraceneri", which includes all the districts lying to the north of Lugano (Ceneri is the name of a pass that splits the Canton into two parts. The northern part is much more mountainous than the southern part). The population of the Canton amounts to approximately 335,000 people, divided into 157 municipalities, with a rather low population density (120/km$^{2)}$.

2.1.2- Historical

Switzerland was created in 1291 with the federal charter. In 1848 Switzerland adopted the political structure of a modern federal state, where the power is divided between the Confederation and the

Cantons. The citizens are subject to a direct democracy which gives them the right to submit a constitutional initiative or a referendum and which may overturn a parliamentary decision.

Up until 1803 Ticino had been continuously conquered and re-conquered both by already existing Cantons and by the different powers governing Northern Italy at the time (Roman Empire, Ostrogoths, Lombards, Franks, Visconti, Dukes of Milan). From 1798 to 1803, and although they were already part of the Confederation, Bellinzona and Lugano were two separate Cantons, unifying and joining the Swiss Confederation as Canton Ticino only in 1803. At present Ticino is not well represented in the federal government, but the Canton is still fundamental, particularly because of the direct access to the Alps, so the Confederation cares greatly about our small region.

2.1.3- Cultural

As already discussed, Switzerland is culturally divided into 4 different regions which are characterized by the 4 languages: German, French, Italian and Romansh. The German-speaking Cantons are culturally more similar to German culture, and the French-speaking Cantons are more similar to French culture, and so on. The exception is the Romansh-speaking Canton (Graubünden), which is split: one part is much like Ticino and another part resembles the German-speaking areas.

Ticino is strongly influenced by Italian culture, although the population feels Swiss and most would never refer to themselves as Italian. Inside the Canton it is possible to identify some small cultural differences between the regions, but not as much as between the different language areas. In fact, the language element is interesting because everybody speaks Italian but every municipality has its own dialect; for example, people from the south of Ticino will struggle to understand people from northern Ticino. This fact indicates that people are still linked to the culture and traditions of the past.

2.1.4- Economical

Its geographical position makes Ticino strategically important for all Europe: most goods that have to travel from the north to the south of Europe, or vice-versa, have to travel through Ticino. The Gotthard Tunnel (northern Ticino) is one of the few points of passage though the Alps, ensuring a continuous development process for the region.

Recent events and economic / political trends call for a closer collaboration and mutual recognition between Lombardy and the Italian part of Switzerland

The main sectors affected by the new regulations are the labour market (with free movement of the people) overland and airline transportation, foreign trade (industrial and agricultural products in particular), public works, and scientific and technological cooperation.

Ticino is characterized by an economic policy favourable to entrepreneurs, and an efficient and flexible public administration. Thanks to its geographical and strategic location, and thanks to the

conditions aimed at encouraging the restoration and renewal of the Cantonal economy, Ticino today is able to compete effectively in the race to become a first-class entrepreneurial centre.

The number of existing businesses has remained constant over the last three years, with a slight increase of 56 companies mainly in the secondary sector, while the tertiary sector has remained basically stable.

In addition of being able to exploit the high level of productivity of its workforce, Ticino offers highly competitive work conditions. In fact, Switzerland ranks first in Europe in terms of average working hours and is one of the nations recording the lowest number of lost working hours.
Since 1998 Ticino has recorded a continuous reduction in the unemployment rate, which in 2002 stood at 3.7%, despite a slight increase compared to previous years.

The gross Cantonal product exceeds 10 billion Euro and represents 3.8% of the Gross National Product. For a population of 310,000, the per capita Gross National Product is 33,000 Euro. The economy of Ticino consists of approximately 20,000 mostly small and medium sized businesses, with just under 160,000 jobs. 70% of the work force is employed in the tertiary sector, 28% in the secondary sector and 2% in the primary sector. It is worth mentioning that 47% of the work force is made up of foreigners, and that almost half of this category are cross-border commuters.

The industrial sector, notably electro-mechanics, chemicals/pharmaceuticals and plastics, generates 21% of the Gross Cantonal Product; the financial sector, including insurance companies, generates 17.5%, the wholesale and retail business 11.2%, self-employed and other services 10%, transportation and communication 6.9%, construction 6.6%.
Tourism contributes approximately 10.5% to the Gross Cantonal Product. Every year approximately 1.2 million tourists visit Ticino, and 3 million overnight stays in 500 hotels are registered. The lodging sector generates 3.5% of the Gross Cantonal Product in the tourism sector.
Southern Switzerland also records inter-regional differences: most secondary and tertiary firms are concentrated close to the main centres (Mendrisio, Lugano, Bellinzona and Locarno), while the rest of the Canton focus more on the primary sector (although this percentage is currently decreasing).

Ticino exports (goods and services) amount to over 3.2 b Euro per annum, with 68% of exports going to EU countries. The principal markets are Italy, Germany, France and North America.

Ticino has a University offering courses in economics, communication sciences, architecture, computer sciences. SUPSI (University of Applied Sciences and Arts of Southern Switzerland) offers instruction with practical applications. Ticino also has a number of important research centres: Institute CIM (Computer Integrated Manufacturing) of Southern Switzerland, the Swiss Centre for Scientific Computing, the Institute “Della Molle” for Artificial Intelligence and the Institute for Research in Biomedicine.

This brief description of Ticino will help readers to understand the context of Southern Switzerland and will facilitate the comprehension of the analysis.

3- Analysis

This third chapter will discuss the results of the questionnaire. Firstly, some general information will be provided about the companies interviewed (region, size, sector, years of operation and how they generally evaluate the importance of tacit knowledge). Secondly, the questionnaire questions and answers will be analysed, which will help provide answers to the hypotheses. An analysis will also be made of potential relations with the sector, years of operation, region and size of the firm; this investigation will be conducted using the qui-squared test.

Before tackling the analysis I feel that it is important to emphasise that the questionnaire was sent to approximately 600 firms from Southern Switzerland, 116 of which responded. The results sometimes needed to be grouped together in order to provide a significant number of results.
The questionnaire was constructed using the structure of the APQC knowledge flow, completed with the contributions of the other authors. It was written in Italian because use of the local language increases the probability of a higher response rate, so, when necessary, the next chapter will also contain translated sections.

3.1- Questionnaire results

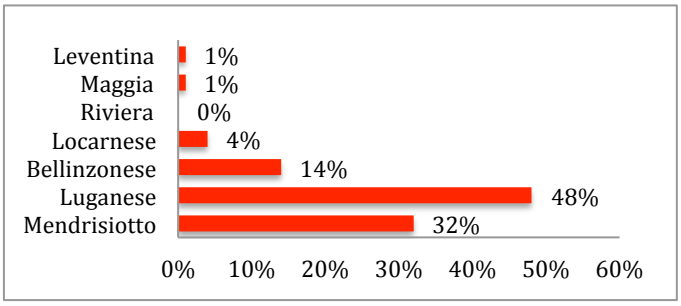
3.1.1- General overview

This first section introduces the structure of the companies that responded to the questionnaire.

This variable will then be used for comparison with some other questions, in order to identify possible relationships between this information and knowledge management aspects.

- ***Region***

Figure 9: In which geographical region is your company located?

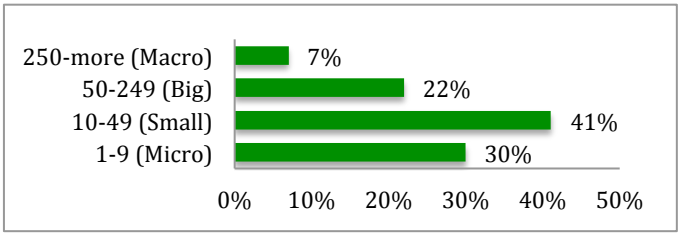


Source: Own elaboration

It can be seen that most of the firms that responded operate around the main cities of the region (Lugano, Mendrisio, Bellinzona). For convenience, the other regions have been added to Bellinzona, therefore forming three main regions: North Ticino (Bellinzona, Riviera, Maggia and Leventina), Mendrisio and Lugano.

- ***Size***

Figure 10: What is the size of your company?

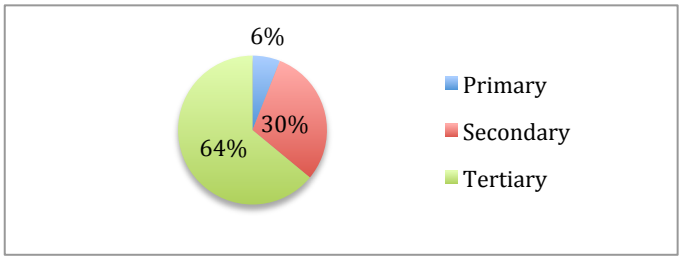


Source: Own elaboration

Size is a factor that typifies Southern Switzerland, which is mainly based on small and medium-sized firms. The questionnaire divided companies into the following categories: micro, small, big and macro firms. In order to achieve a sufficient size for the analysis, I grouped the last two levels (big and macro) together into one "big" category, which includes firms with from 50 to 249 and those with 250 or more employees. This will provide representativeness.

- ***Sector***

Figure 11: In which sector do you operate?

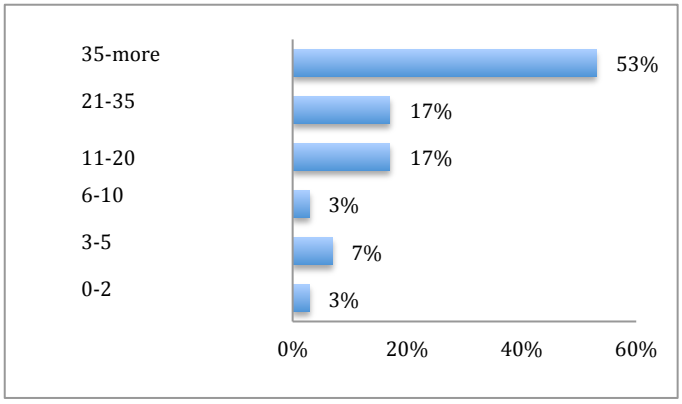


Source: Own elaboration

The sectors of the firms are another element typical of this region. The primary sectors are little represented in the Southern Switzerland; the secondary sector is more strongly represented, as is the service industry (tertiary sector), which is definitely the most important source of income for the region, particularly the financial sector.

- ***Years of operation***

Figure 12: How long has your company been in operation?

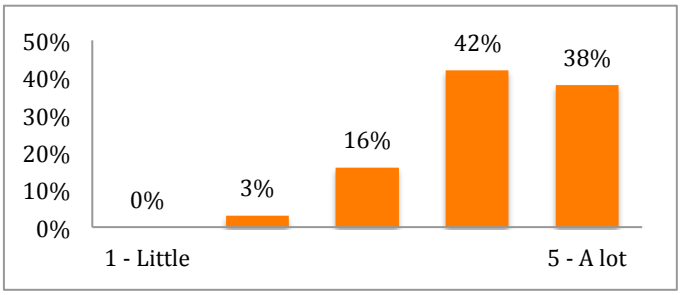


Source: Own elaboration

These responses show that most the companies have a long history, more than 35 years. The other results will not be significant and, for this reason, I decided to group some of them together. The final outcome was three classes: 0-20 years, 21-35 years and more than 35 years, ensuring at least 20 results per class and a representative sample.

- ***Importance of tacit knowledge***

Figure 13: To what extent do you deem important the tacit knowledge of your employees?



Source: Own elaboration

After this brief initial collection of data, I asked the company *"In general terms how do you consider the tacit knowledge of your employees? (1- not much; 5- a lot)".* From this initial question it seems that companies from Southern Switzerland interpret tacit knowledge as a fundamental source and that they are strongly interested in managing it in order to gain competitive advantages.

3.1.2- Tacit knowledge management

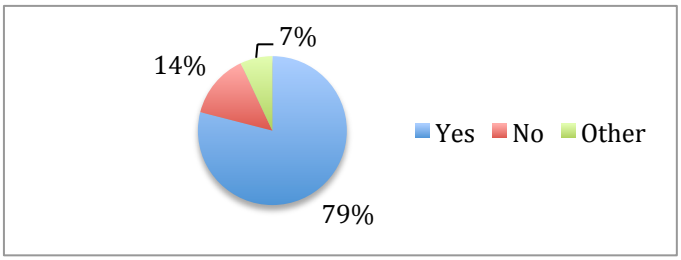
A simplified APQC flow process structure (create, share, use) will now be examined. This second part will be partially a presentation of the results of the questionnaire, and partially, where possible, an attempt to find a relationship by means of the Chi-squared statistical test. This statistical analysis has been mainly used for the questions that can help answer the hypotheses.

3.1.2.1- Create tacit knowledge

Before to be shared and used, tacit knowledge has to be "created". In this section I will try to identify these practices that facilitate the birth of this important resource inside the company. In this case the word "create" will not signify to build the knowledge from zero but the capability to bring it to light.

Davenport & Prusak (1998) maintain that hiring the right people and evaluating their tacit knowledge during the recruitment period is an important aspect because the company will be able to understand in advance the advantages that the new collaborator might bring, and the management will be in a position to identify the right place in the organisation for this new person.

Figure 14: During the recruitment process, do you consider the tacit knowledge potential of the applicant?



Source: Own elaboration

The graph indicates a positive trend: approximately 80% of the firms answered positively, so during job interviews applicants are also questioned about their tacit knowledge. I can imagine that this is achieved by means of questions about previous jobs, past experiences and interaction. Tacit knowledge can also be "tested" through a brief work experience period, when the person can demonstrate her/his qualities, skills and capabilities in person.

Table 3: Consider the potential of tacit knowledge: Region

Region	No	Yes	Total
Luganese	5	49	54
	9.26%	90.74%	100%
Mendrisiotto	10	25	35
	28.57%	71.43%	100%
Sopraceneri	6	14	20
	30.00%	70.00%	100%
Total	**21**	**88**	**109**
	19.27%	**80.73%**	**100%**
Personal chi2(2) = 6.9064 Pr = 0.032			
Likehood-ratio chi2(2) = 7.2017 Pr = 0.027			
Fisher's exact = 0.027			

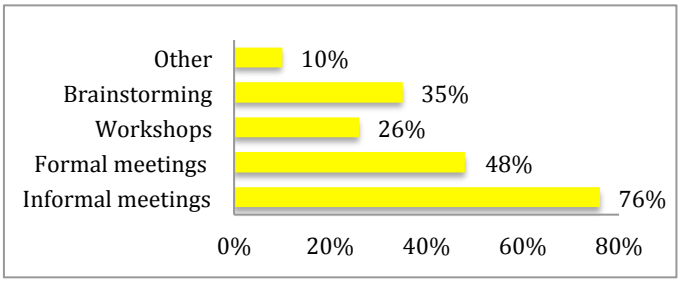
Source: Own elaboration

In order to understand possible differences between some variables (sector, years of operation, region, size of the firm) and the answers given, I decided to statistically analyse the results through a chi-square test, which showed that the "region" variable alone is significant (chi2 < 5%). It can be seen that all three regions take into account tacit knowledge during the hiring process. The percentage is slightly higher in the Lugano region. This small difference can be related to the fact that Lugano is much more oriented toward the tertiary sector, which, I believe, is more concerned about these "abstract" aspects during job interviews. It is generally it is possible to assume that the other two regions focus much more on manual and technical capabilities.

* * * * * * *

According to Nonaka & Takeuchi (1995), Davenport & Prusak (1998) and Pasher & Ronen (2011), holding meetings is a fundamental part of daily business activities, but they must be conducted correctly in order to manage tacit knowledge. As starting point, an analysis could be conducted on the types of meetings habitually held by the company.

Figure 15: During daily meetings, which types of meetings do you prefer? (Multiple answers)



Source: Own elaboration

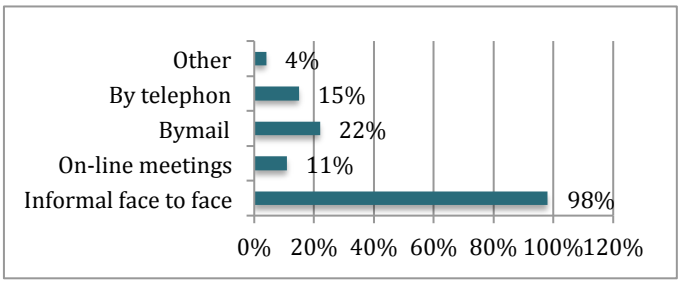
The graph shows that most meetings are managed informally, followed by formal meetings, workshops and brainstorming. The distribution seems generally good. As already seen previously in the project, informal meetings are an important source of knowledge creation and knowledge sharing. I consider workshops and brainstorming as half formal and half informal: the people involved are generally free to say what they think, the schedule is not really fixed and structured and can be adapted to the requirements of the meeting, but these meetings still have to be managed in order to give the expected results.

* * * * * * *

Interactions can be executed in multiple ways, from the more personal (face-to-face) to the less personal (via mail). O'Dell & Hubert (2011) say that, to be shared, tacit knowledge requires personal

contact, so, in other words it needs face-to-face relations, people need to get in touch with each other and these interactions must be promoted and motivated. Davenport and Prusak (1998) maintain that face-to-face meetings can also improve the sense of trust between employees.

Figure 16: Which kinds of interactions do you prefer?



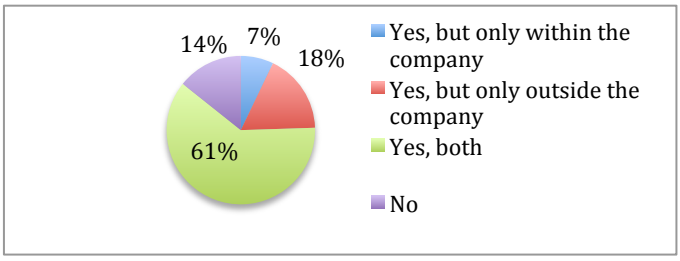
Source: Own elaboration

The results are very positive. The multiple answers make it possible to identify the kinds of interactions preferred by firms from Southern Switzerland. Virtually all the companies interviewed are willing to apply face-to-face interactions (98%), followed by relations conducted by mail (22%), by telephone (15%) and by on-line meetings (11%). The fact that machines and IT do not substitute human interactions definitely makes a positive impact on knowledge sharing.

* * * * * * *

According to Pasher & Ronen (2011) and Davenport & Prusak (1998), training programmes increase the knowledge asset of the company and of the individual employee. This knowledge acquisition method can be partially developed inside the company, as well as in collaboration with external partners (universities, training agencies, etc.).

Figure 17: Do you offer training courses to you employees?



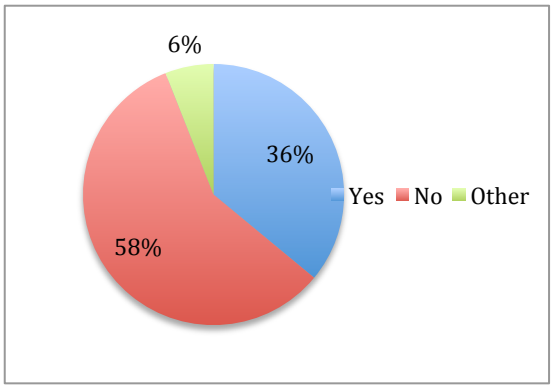
Source: Own elaboration

60% of the companies interviewed answered that they offer both internal and external training programmes, 18% of those only in collaboration with external partners and 7% only internally. Fortunately, only 14% of the firms do not offer any training. This positive trend is fundamental for the acquisition of knowledge because it ensures new knowledge from different perspectives/people with different backgrounds/people from different cultures.

* * * * * * *

Knowledge workers are an important resource for a company and they must be managed correctly. According to Pasher & Ronen (2011), a company hiring collaborators of this type makes its knowledge asset grow; of course, these people must be motivated to stay in the company and engage themselves for the company, so the management needs to work in this direction.

Figure 18: Do you manage "knowledge workers" in a different way?



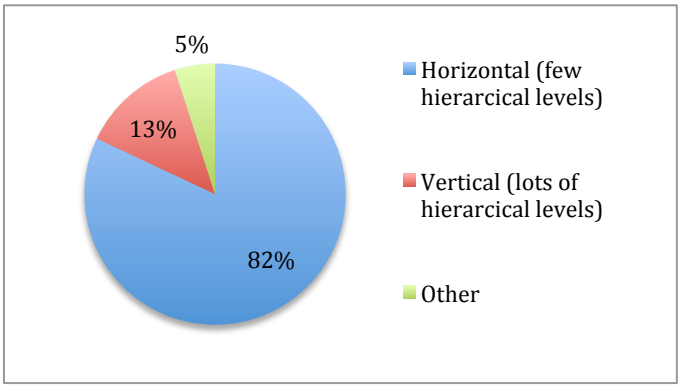
Source: own elaboration

From a "tacit knowledge management" aspect the results are not very positive because only 36% of the companies answered positively, showing that more than 50% do not treat "normal" and knowledge workers differently. I believe that this situation can also be viewed positively: the fact that all employees are treated in the same way prevents the creation of elite groups, which might de-motivate the other collaborators. This way of thinking is well represented in Ticino, and in fact all the companies contacted by me in the course of my last few years of study try to manage all workers in a relatively similar fashion, avoiding differential treatment and generally preferring to place knowledge workers in managerial positions.

* * * * * * *

In order to make knowledge flow in the right direction and to the right people, the hierarchical structure of the company must be preferably horizontal. According to Pasher & Ronen (2011), respect and trust for workers facilitates knowledge creation and sharing more than a vertical structure, where the management has little or no contact with the other hierarchical levels and where the different departments are also generally perceived as seen as black-boxes.

Figure 19: How would you represent your hierarchical structure?



Source: Own elaboration

In relation to the previous question, it is symptomatic that most Southern Switzerland companies have a horizontal hierarchical structure, which can help stimulate the exchange of tacit knowledge. Organisations of this type are generally very willing to put people in touch with each other, and let them interact, in order to give them the opportunity to freely share and create new knowledge.

Table 4: Hierarchical structure: Sector

Sector	Horizontal	Vertical	Total
Primary	5	1	6
	83.33%	16.67%	100%
Secondary	26	9	35
	74.29%	25.71%	100%
Tertiary	69	5	74
	93.24%	6.67%	100%
Total	**100**	**15**	**115**
	86.96%	**13.04%**	**100%**
Personal chi2(2) = 7.6023 Pr = 0.022			
Likehood-ratio chi2(2) = 7.1483 Pr = 0.028			
Fisher's exact = 0.018			

Source: Own elaboration

In this specific case I found a good relationship and it can be seen that, in general, all three sectors analysed tend to present a horizontal hierarchical structure. I think that the tertiary sector is the one that most displays this trend and the possible cause could be related to the fact that in this sector the flow of communication and knowledge needs to be as efficient as possible, and a horizontal structure is the best solution to achieve the goal of creating a knowledge company.

Table 5: Hierarchical structure: Size of the firm

Firm's size	Horizontal	Vertical	Total
1-9 (Micro)	35	0	35
	100.00%	0.00%	100%
10-49 (Small)	37	9	46
	80.43%	19.57%	100%
50-more (Big)	26	7	33
	78.79%	21.21%	100%
Total	**98**	**16**	**114**
	85.96%	**14.04%**	**100%**
Personal chi2(2) = 8.2891 Pr = 0.016			
Likehood-ratio chi2(2) = 12.8940 Pr = 0.002			
Fisher's exact = 0.006			

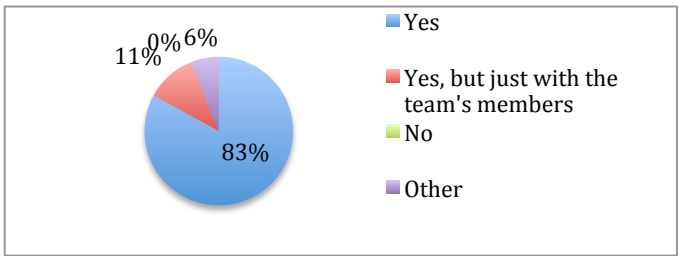
Source: Own elaboration

The size of the firm also shows a relationship with the hierarchical structure. Here it is possible to note that the smaller the firm, the more horizontal the structure. It is also true that for a micro company (1-9 employees) it is quite impossible to have a vertical structure, so the first result cannot really taken into consideration. However, the other two realties can be analysed since, in Ticino, large firms are generally industrial in nature, operating in the secondary sector, which, as seen above, tends to have a horizontal structure, although the tertiary sector, consisting mainly of "middle-small size" firms (10-49 employees) records an even higher percentage.

* * * * * * *

Trust causes people to interact in such a way that everybody feels positive about each other and is therefore not afraid of expressing everything freely, from personal to professional issues. According to Nonaka & Takeuchi (2000), Pasher & Ronen (2011) and Davenport & Prusak (1998), trust can be facilitated by face-to-face meetings and informal interaction. Trust directly influences respect, which will make employees willing to share knowledge with other workers and with the management. Under certain circumstances, trust will also include friendship, which will motivate people to give as much input as possible for the benefit of their colleagues and therefore also of the company. The following two graphs will be analysed together because, firstly, they discuss the same topic, and secondly, they present approximately the same results.

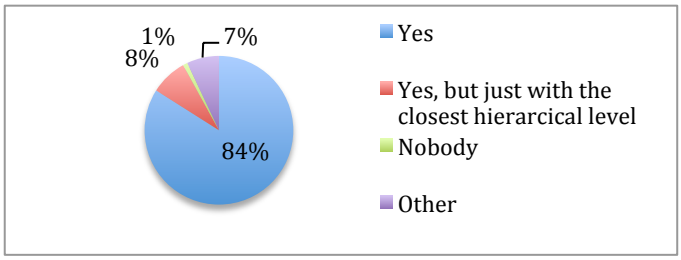
Figure 20: Do your employees demonstrate trust in their colleagues?



Source: Own elaboration

Here the companies were asked about their employees and the trust they place in their colleagues and in the different hierarchical levels. Possible answers were: yes, yes but only with closer colleagues/hierarchical level, or no. In both cases the results are similar: approximately 85% say that their employees trust both in their colleagues and in the different hierarchical levels, without any distinctions between close or distant people.

Figure 21: Do your employees demonstrate trust in the different hierarchical levels?



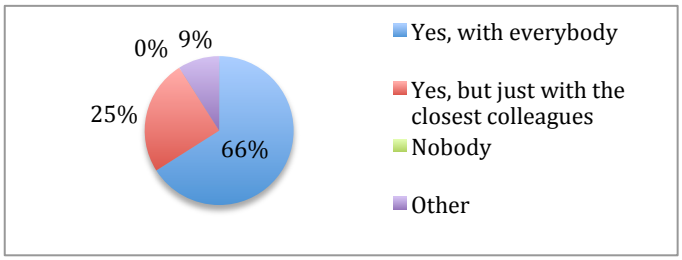
Source: Own elaboration

These positive trends can be identified in Ticino firms also during some visits, particularly because in most firms it is possible to sense a relatively informal environment, which generally also facilitates a sense of trust and affiliation with the company. This sense of trust will break down the walls that in some firms impede an efficient flow of knowledge.

* * * * * * *

This question, closely related to the previous two, asks about the how collaborators feel about expressing their opinions; in other words if they feel free to express their opinions, or not. According to Davenport & Prusak (1998) and Pasher & Ronen (2011), this aspect can be facilitated by informal meetings and mutual trust.

Figure 22: Do your employees feel free to express their opinions?



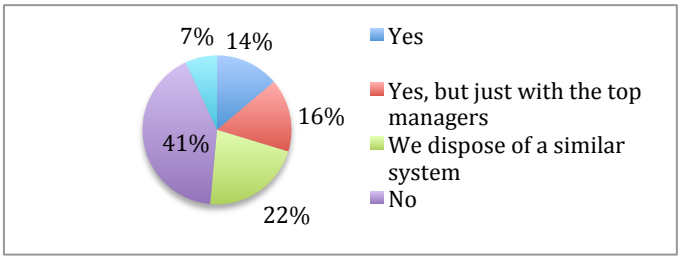
Source: Own elaboration

The results seem very clear: 66% of the firms interviewed answered positively that their collaborators feel free to express their opinions with everybody in the company, 25% answered yes, but just with their closest colleagues, while nobody gave a negative answer. The graph is very similar to the previous two, showing the relationship between trust and the sense of feeling free to express opinions.

The knowledge collected must be reviewed in order to identify which is of good "quality" and which can be useful to the company. This job is not always easy because it requires a lot of time and dedicated personnel; moreover, it is definitely not easy to work with intangible assets.

The After Action Review (AAR) is a practice often used to assess an operation/a project. According to Pasher & Ronen (2011), at these times all the people involved present both the positive and the negative points of the situation that has just passed. This sharing of opinion allows people to think about the past and to reflect on the future, learning lessons that can then be translated to processes/procedures that can be used for a subsequent project or for daily business. In other words, an AAR can review, elaborate and analyse what happened during a specific situation, and from the parties involved can then acquire/share knowledge.

Figure 23: Do you use an AAR concept?



Source: Own elaboration

In this question the firms could answer with: no (41%), we have a similar system but not AAR (22%), yes (14%), yes but only the management it takes part (16%). The negative answers seem preponderant, although about 50% of the companies interviewed have an AAR system or a similar system. I think that AAR is a very important feedback instrument: I had the opportunity to apply it during my army period as an officer and I observed the utility of such a system in practice.

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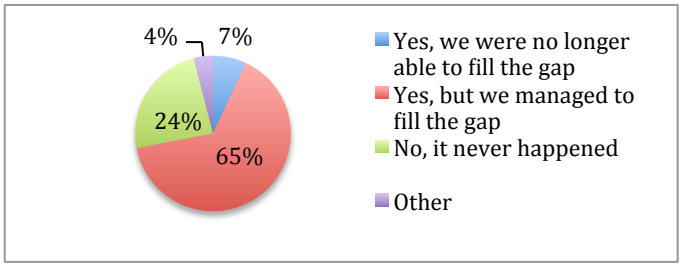
The departure of an employee creates the risk of losing tacit knowledge and this is a situation that a knowledge company should never encounter. According to Davenport & Prusak (1998) and Pasher & Ronen (2011), it is very important to keep knowledge workers inside the company or at least to capture their assets and try to transfer them to other people.

Figure 24: Have you ever noticed that you have lost knowledge, for example at the departure of a collaborator?



Source: Own elaboration

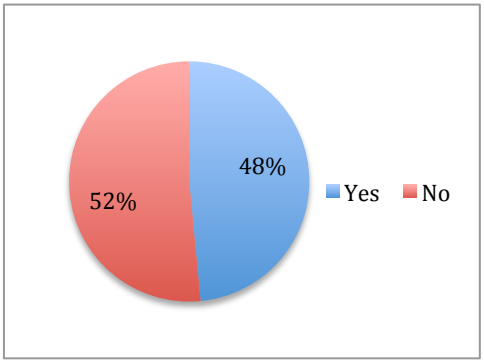
The firms interviewed show positive results here: 65% have lost knowledge but they managed to fill the gap. In 24% of the companies it has never happened and only 7% of the firms had lost knowledge without being able to replace it. As seen above, gaps can be closed by projects aiming to transfer knowledge from experienced people to new employees, or by hiring new employees who possess similar characteristics/skills/experiences, and who will probably have similar knowledge.

3.1.2.2- Share tacit knowledge

We are now reaching the point that, I believe, plays a fundamental role in tacit knowledge management. The knowledge present in the company must be useful and to be useful, people must be able to express their capabilities, and knowledge must also be shared between the collaborators so that if the collaborator with the tacit knowledge leaves the company, the knowledge will remain in the company.

According to Pasher & Ronen (2001) and Davenport & Prusak (2011), "Communities of practices" are groups of workers that, in an informal way, meet each other, share interests with trust in each other. These groups are one of the ways in which collaborators share tacit knowledge and consequently make the knowledge flow active, allowing the company benefit from it.

Figure 25: Do you have "Communities of Practices"?



Source: Own elaboration

In the specific case of Southern Switzerland, it is possible to see that approximately 50% of firms have communities of this kind. It is therefore neither a negative nor a positive result. There clearly appears to be great potential for improvement because these groups of workers play a very important role in the knowledge sharing process. Presumably, some of the companies that answered "no" might not identify these communities although they may be present.

Unfortunately the "Communities of practice" characteristic does not have any relationship with the four variables analysed (sector, years of operation, region, size of firm). The chi-squared test gave a result of more than 5% for all of them.

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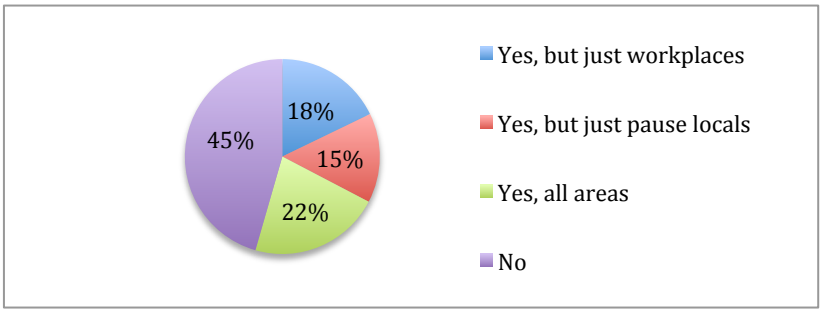
According to Davenport & Prusak (1998) and Webber (1993), discussions and the exchange of knowledge/ideas/experiences must be stimulated, and one element playing an important role is the work environment, ranging from the physical aspects to interpersonal relationships. For this question I decided to focus on the physical spaces, and on whether the companies from Southern Switzerland ever thought about and consequently implemented such ideas.

Figure 26: Have the areas in the company have been studied, in terms of visual and physical features, with a view to stimulating discussion and the exchange of ideas/experiences between employees?



Source: Own elaboration

The graph appears to show that almost 50% of the firms had never studied their own areas in order to stimulate discussion and exchange of ideas/experiences between employees. On the other hand, the rest of the firms had done so, although 22% for all the areas, 18% just for the workplace and 15% exclusively for recreational zones. The 45% that had not studied this aspect may never have considered the importance of the environment, or they may have viewed it simply as a cost and not as an investment. Logically, a nice, well structured room is a place where people are willing to go, remain and interact with each others. It seems clear that, in relation to this topic, some improvements can be made, with the goal of making firms aware of the fact that to creating the right environment is an investment that must be made.

Table 6: Areas have been studied with a view to stimulating discussion and knowledge sharing: Sector

Sector	No	Yes, but only certain areas	Yes, all	Total
Primary	4	2	0	6
	66.67%	33.33%	0%	100%
Secondary	20	13	2	35
	57.14%	37.14%	5.71%	100%
Tertiary	29	23	22	74
	39.19%	31.08%	29.73%	100%
Total	**53**	**38**	**24**	**115**
	46.09%	**33.04%**	**20.87%**	**100%**
Personal chi2(2) = 10.3957 Pr = 0.034				
Likehood-ratio chi2(2) = 12.7985 Pr = 0.012				
Fisher's exact = 0.021				

Source: Own elaboration

This question was also statistically analysed (chi-square), identifying two relationships: the first with "sectors" and the second with "years of operation".

In this specific case it can be seen that the primary and secondary sectors are less willing to focus on the physical aspect of the workplace. The tertiary sector shows a more "uniform" trend: around 60% had studied areas with a view to stimulating discussion and knowledge sharing, at least in some areas. It seems that the "more bureaucratic" sector is more willing or has more resources to invest time and money in such activities and investment.

Table 7: Areas have been studied with a view to stimulating discussion and knowledge sharing: Years of operation

Years of activity	No	Yes, but only certain areas	Yes, all	Total
0-20	16	11	7	34
	47.06%	32.35%	20.59%	100%
21-35	3	9	8	20
	15.00%	45.00%	40.00%	100%
35-more	33	18	10	61
	54.10%	29.51%	16.39%	100%
Total	**52**	**38**	**25**	**115**
	45.22%	**33.04%**	**21.74%**	**100%**
Personal chi2(2) = 10.1195 Pr = 0.038				
Likehood-ratio chi2(2) = 10.8629 Pr = 0.028				
Fisher's exact = 0.030				

Source: Own elaboration

The variable "years of operation" also shows a relationship with this question. The results are rather unusual: "young" and "old" companies are less willing to invest in the areas of the firm, while "middle old" organisations showed a strong interest (85%). From the research aspect I do not find the result relevant because I have not found any theories or unique features of the territory that can help explain this outcome.

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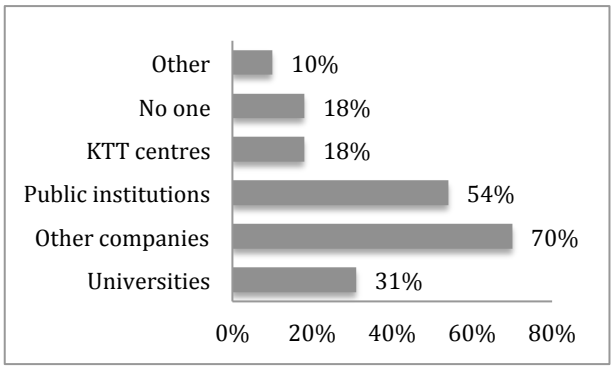
This project focuses mainly on internal sources of knowledge (employees and management teams), but external actors also provide a fundamental source of knowledge and companies were therefore asked about their interaction with these parties (universities, other firms, institutions, knowledge and technology transfer centres, others). According to Nonaka & Takeuchi (2000) Pasher & Ronen (2011) and Davenport & Prusak (1998), these actors and the interaction with them help companies to identify the knowledge required in order to achieve the mission of the firm.

Figure 27: Do you interact with external actors? If yes, which?



Source: Own elaboration

In this multiple question the firms could give more than one response. It can be seen that most responses are concentrated around "other firms" (70%), "institutions" (54%) and "universities" (31%). This result was slightly surprising because the expected order had been firstly universities, then institutions and finally other firms. The real situation is probably represented in this way because in a such a small region as Southern Switzerland, firms try to mainly interact with the actors (firms and institutions) that are present in the local area and consequently closer to them. Universities are generally an important source of external knowledge, but in Ticino universities (and universities of applied science) are currently in a development phase and have begun interacting with firms only in the last few years, so firms are probably not accustomed to contacting actors of this type.

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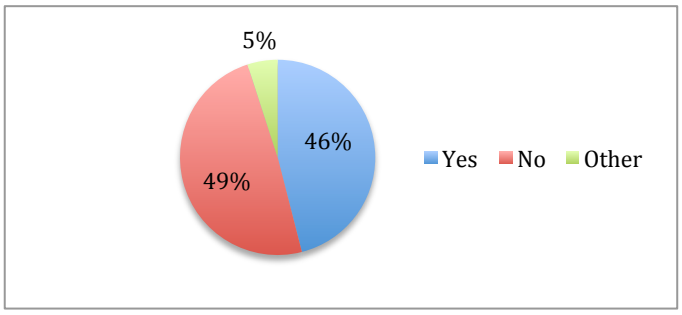
Knowledge needs to be collected, and to do this it is important that the management organizes activities aimed at stimulating the workers to express their tacit knowledge. According to Davenport & Prusak (1998) and Pasher & Ronen (2011), this requires a lot of resources (time, money, spaces, people, etc.), needs to be managed and can be both formal and informal: the first type must be planned and organized from start to finish, while the second type must be promoted and perhaps facilitated.

Figure 28: Do you have any activities that enable employees to express their tacit knowledge?



Source: Own elaboration

The results here are 46% for yes and 50% for no. This result can be seen as potential for improvement; in other words it is not bad but I am sure that many firms might be able to implement such activities, which must be viewed as an important investment and not as a cost. Unfortunately, however, daily business often does not leave time for developing activities of this type, and management considers them as secondary and as a loss of resources.

Table 8: Activities to express tacit knowledge: Sector

Sector	No	Yes	Total
Primary	4	2	6
	66.67%	33.33%	100%
Secondary	25	9	34
	73.53%	26.47%	100%
Tertiary	31	43	74
	41.89%	58.11%	100%
Total	**60**	**54**	**114**
	52.63%	**47.37%**	**100%**
Personal chi2(2) = 9.8535 Pr = 0.007			
Likehood-ratio chi2(2) = 10.1536 Pr = 0.006			
Fisher's exact = 0.006			

Source: Own elaboration

In order to better understand the phenomenon it was decided to analyse this aspect through its relationship with the four variables (sector, years of operation, region, firm size). I found associations with sector and region. For the former variable, it can be commented that the results are significant: it appears evident that the primary and secondary sectors are less willing to involve themselves or to organize activities that facilitate the expression of tacit knowledge. On the other hand, the tertiary sector seems to be much more oriented toward these particular activities, and appears to be more willing to invest resources, in this specific case time and people, in such activities.

Table 9: Activities to express tacit knowledge: Region

Region	No	Yes	Total
Luganese	25	29	54
	46.30%	53.70%	100%
Mendrisiotto	29	6	35
	82.86%	17.14%	100%
Sopraceneri	5	15	20
	25.00%	75.00%	100%
Total	**59**	**50**	**109**
	54.13%	**45.87%**	**100%**
Personal chi2(2) = 19.8025 Pr = 0.000			
Likehood-ratio chi2(2) = 21.2353 Pr = 0.000			
Fisher's exact = 0.000			

Source: Own elaboration

Looking at the region it is possible to note a strong relationship between the variable and the inclination to create activities stimulating employees to express their tacit knowledge. The results indicate a keen interest by the "Sopraceneri" region, "Luganese" shows medium attention to this factor, while "Mendrisiotto" seems really unwilling to implement such activities. Two results - "Mendrisiotto" and "Luganese" - seem rather strange because the first region has many secondary firms on its territory, and, as seen above, they are less willing to adopt knowledge activities, while "Luganese", with its high concentration of tertiary firms, should record an higher percentage of firms with a positive answers. I do not know the reason but it might have been caused by a misunderstanding of the question or by the rush to respond.

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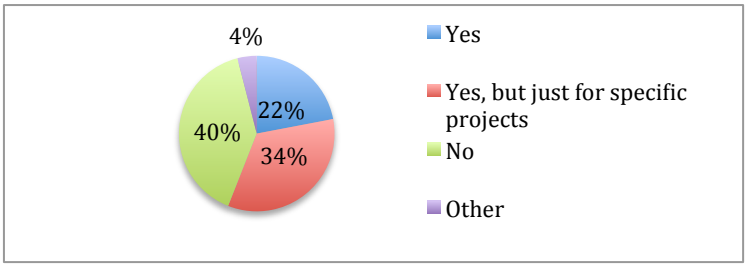
Cross-departmental teams and cross-departmental meetings are particularly important to prevent departments from being perceived and interpreted as watertight compartments. According to Davenport & Prusak (1998), bringing together people from different areas in the firm can stimulate the creation and the collection of new knowledge. This interaction will therefore also positively influence knowledge sharing.

Figure 29: Do you have cross-departmental teams?



Source: own elaboration

The positive answers are preponderant, although the majority of these (34%) answered affirmatively but just for specific projects. I think it would be advisable to reduce the negative answers, in other words to motivate more firms to use such cross-department teams; internal interactions/collaborations could probably also facilitate collaboration with external partners/firms.

Table 10: Cross-departmental teams: Years of operation

Years of activity	No	Yes, but only for certain projects	Yes	Total
0-20	22	7	5	24
	64.71%	20.59%	14.71%	100%
21-35	11	8	1	20
	55.00%	40.00%	5.00%	100%
35-more	17	24	19	60
	28.33%	40.00%	21.93%	100%
Total	**50**	**39**	**25**	**114**
	43.86%	**34.21%**	**21.93%**	**100%**
Personal chi2(2) = 15.8775 Pr = 0.003				
Likehood-ratio chi2(2) = 17.1385 Pr = 0.002				
Fisher's exact = 0.003				

Source: Own elaboration

The variable "Years of operation" has a relationship with the topic discussed above. Putting together the second two columns (Yes and Yes but just for specific projects) showed that young firms are less willing to adopt cross-departmental teams, while the older the firm, the greater the interest displayed in this way of working. I see two possible reasons for this: the first is related to the fact that, thanks to their experience, "old" firms have a better understanding of the value of cross-department teams; the second reason can be linked to the fact that young companies do not have enough resources to cope with such teams, which generally involve some investments.

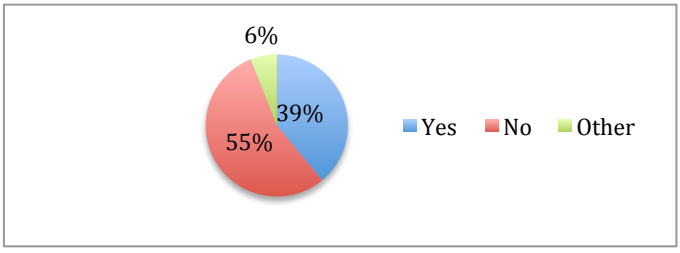
Table 11: Cross-departmental team: Size of the firm

Firm's size	No	Yes, but only for certain projects	Yes	Total
1-9 (Micro)	24	6	5	35
	68.57%	17.14%	14.29%	100%
10-49 (Small)	21	16	9	46
	45.65%	34.78%	19.57%	100%
50-more (Big)	3	18	11	32
	9.38%	56.25%	34.38%	100%
Total	**48**	**40**	**25**	**113**
	42.48%	**35.40%**	**22.12%**	**100%**
Personal chi2(2) = 24.4838 Pr = 0.000				
Likehood-ratio chi2(2) = 27.4674 Pr = 0.000				
Fisher's exact = 0.000				

Source: Own elaboration

A second variable presents a relationship with the cross-departmental teams: the "size of the firm". I put together the two "yes" classes here as well, and by doing so it appears that the bigger the company, the more able it is to adopt cross-departmental teams, always or only for specific projects. This can be linked to the fact that first of all large firms are more likely to have departments and consequently the possibility of getting involved in cross-departmental teams, while small and micro firms generally have few or no departments and the answers are therefore mostly negative. Secondly, large firms have more resources (financial, human, etc.) and more interest in investing in such activities.

Figure 30: Do you have cross-departmental meetings?



Source: Own elaboration

The concept of cross-departmental meetings resembles the one seen previously but is less binding, although the results present realty in a different way. I expected more positive answers, but 55% do not do these kinds of meetings. In this case no relationships were

found with the four variables, but it can be presumed that firms without departments (too small) will have answered "no", and companies from the primary sector are also probably less likely to have many departments so cross-departments have less sense.

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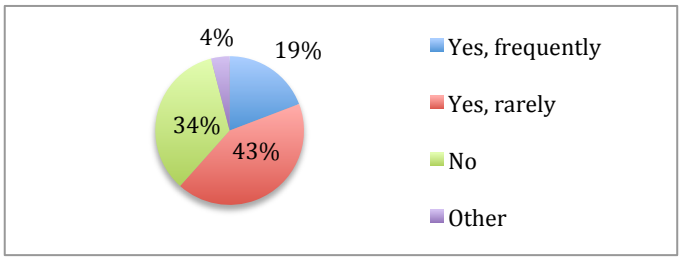
Activities outside the workplace play a fundamental role in creating the right environment for stimulating informal interaction between the people involved. This element can be linked to the sense of trust and friendship discussed above. According to Nonaka & Takeuchi (2000) and Pasher & Ronen (2011), these activities stimulate discussion and the fact of being outside the boundaries of the firm makes the employees feel freer to express their ideas, therefore providing the company with the opportunity to collect a more complete spectrum of knowledge.

Figure 31: Does the company organize activities outside the workplace?



Source: Own elaboration

The graph gives a positive overview of the situation in Southern Switzerland: approximately 20% organize these "events" frequently, 43% rarely and "just" 34% do not organise such activities. I believe that these moments are very positive because people often interact and share knowledge without knowing it.

Table 12: Activities outside the workplace: Region

Region	No	Yes, frequently	Yes, rarely	Total
Luganese	17	12	23	53
	32.08%	24.53%	43.40%	100%
Mendrisiotto	21	16	9	36
	52.78%	8.33%	38.89%	100%
Sopraceneri	3	6	11	20
	15.00%	30.00%	55.00%	100%
Total	**39**	**22**	**48**	**109**
	35.78%	**20.18%**	**44.04%**	**100%**
Personal chi2(2) = 10.2467 Pr = 0.036				
Likehood-ratio chi2(2) = 11.0924 Pr = 0.026				
Fisher's exact = 0.031				

Source: Own elaboration

The chi-squared test gave me just one variable, which has a relationship with the "activities outside the workplaces": the region.

"Mendrisiotto" is the region with the lowest % of "Yes" responses, and this can presumably be related to the fact that, due to its concentration of secondary sector firms, this region is less willing to invest in such activities outside the workplace. On the other hand, "Sopraceneri" is also mainly focused on firms operating in the primary and secondary sectors, but the region seems to be more oriented toward going outside the firms boundaries, even the region that most applies these knowledge management activities.

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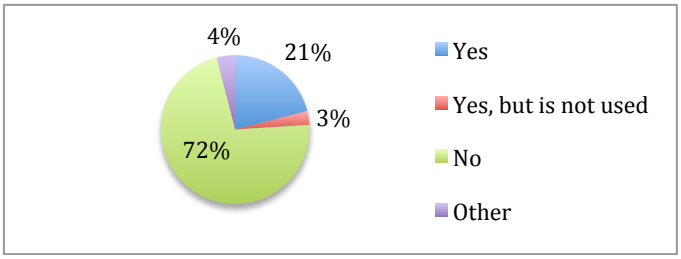
ICT systems can facilitate tacit knowledge management but will never be able to substitute the human element. As already seen during the theoretical approach and according to Nonaka & Takeuchi (2000) and Pasher & Ronen (2011), ICT can help the management (e.g. to collect tacit knowledge that has

been translated into explicit knowledge) or it can be used to facilitate interaction between employees/departments.

Figure 32: Do you have an ICT system that helps you to collect and to manage, as far as possible, the tacit knowledge present in the firm?



Source: Own elaboration

As expected, only a few firms (24%) have an ICT system of this kind. It might be interesting to understand the kinds of software they use, the real benefit gained and how the system helps to collect and to manage tacit knowledge (this topic could be considered for a further research).

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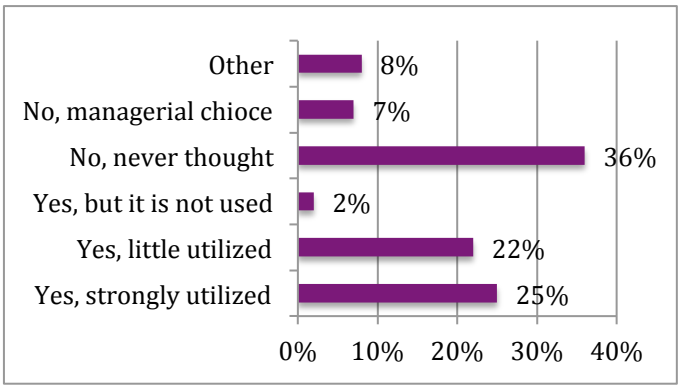
The "location" topic has already been discussed but is now analysed again due to its importance in fostering interactions and knowledge sharing. According to Webber (1993) and Davenport & Prusak (1998), these "not organized" discussions must be facilitated by the management, and one way in which to do this is by giving employees a room/a place where they can share ideas, experiences, etc.. In practice, this could be a room where people can take a break, or even a room like those found at Google, where people are "encouraged" to interact by playing, drinking, eating and so on.

Figure 33: Do you have of an area where people can interact in an informal way, sharing experiences and knowledge?



Source: Own elaboration

Ticino initially seems very poor in terms of areas where people can interact in an informal way, sharing experiences and knowledge: 43% of firms do not have of such facilities, both because they have never even considered the possibility and because of management choice. On the other hand, the "yes" answers amount to around 50%, which seems a positive result. Unfortunately only 25% of the firms interviewed answered "Yes and it is often used", 22% "is underused" and 2% "the area is not used at all". These results tell us that there is potential, particularly for these companies that have such areas although they are seldom or never used. Here the problem can be related to the culture that does not sufficiently stimulate interactions, or to the lack of time. The firms that do not have an area for interactions could consider the possibility of reserving an area for these activities.

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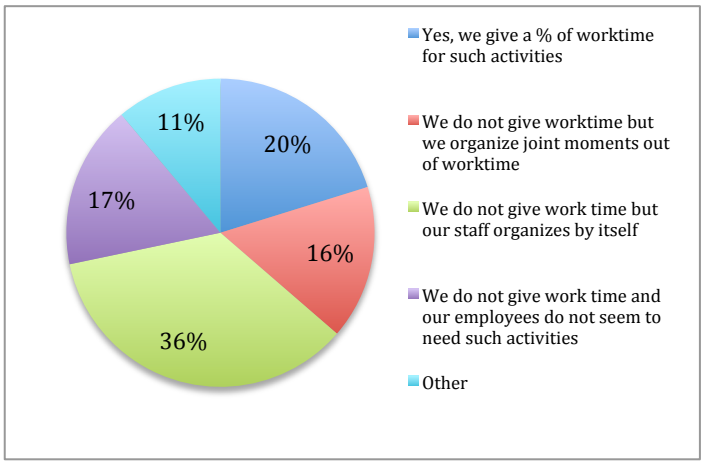
The physical place has to be accompanied by the availability of time to interact: you can have the best areas for informal interactions but if employees do not have time to benefit from them, the entire project has no sense and the areas will logically be underused. According to Davenport & Prusak (1998) and O'Dell & Hubert (2011), "time" is one of the resources that is needed for correct knowledge management, particularly in the case of tacit knowledge.

Figure 34: Do your employees have time to share experiences and knowledge?



Source: Own elaboration

The results are well distributed: 20% of firms give time to their employees during working hours; 16% do not give time during working hours but they organise activities at other times; 35% do not give time to their employees but they organize activities by themselves; finally, 17% of the companies interviewed do not give time and their employees do not seem to need such activities. The last possibility of answers was a little trap because the people giving this answer did not understand the fundamental role in this process played by management, which is to stimulate and to promote and not to wait until the employees feel the need for such activities. The other three answers are all positive because they show that something is moving in these firms, and also that there are collaborators who interact spontaneously, creating a sharing of knowledge and experiences.

Table 13: Time to share experiences and knowledge: Sector

Sector	No	No, we do not give extra time	Yes, we give extra time	Total
Primary	0	4	2	6
	0.00%	66.67%	33%	100%
Secondary	18	12	4	34
	52.94%	35.29%	11.77%	100%
Tertiary	21	25	23	69
	30.43%	36.23%	33.33%	100%
Total	**39**	**41**	**29**	**109**
	35.78%	**37.61%**	**26.61%**	**100%**
Personal chi2(2) = 14.6032 Pr = 0.024				
Likehood-ratio chi2(2) = 17.4316 Pr = 0.008				
Fisher's exact = 0.006				

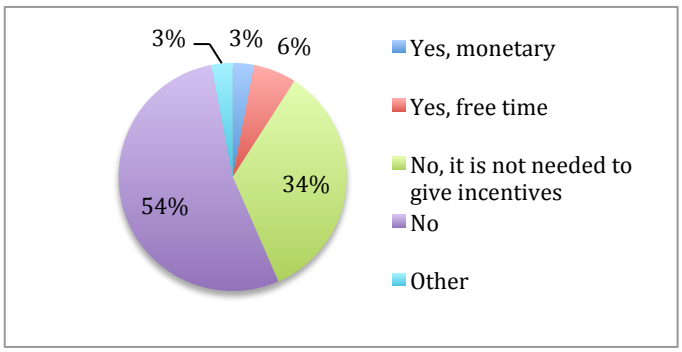
Source: Own elaboration

The time that the firms give to the employees for informal interactions was found to have a relationship with the variable "sector". In order to be as representative as possible it was decided to group some classes together (No, other; No we do not give time, Yes we give time). It was therefore possible to identify the tertiary sector as the one that most adopts such ideas. The primary sector cannot be taken into consideration because the low number of results cannot represent the sector. The tertiary sector is stronger than the secondary one. The negative results can generally be linked to the fact that the main core business takes up too much energy and resources, so there is nothing left for "knowledge sharing" moments.

* * * * * * *

The provision of incentives (money, free time, etc.) is not essential in order to stimulate tacit knowledge sharing, but it can help. Rewards can encourage people and can be considerably useful at the beginning: let us imagine a firm that wants to become a knowledge company and consequently improve its knowledge assets; as a starting point the management could try to introduce a type of "knowledge award", rewarding those collaborators who engage in knowledge sharing activities or who propose actions/activities promoting knowledge management. Davenport & Prusak (1998) maintain that, if "pushed" by incentives, employees who own specific knowledge will be more willing and motivated to share their knowledge or to interact with the rest of the company.

Figure 35: Do you stimulate knowledge sharing through incentives? If yes, which?



Source: Own elaboration

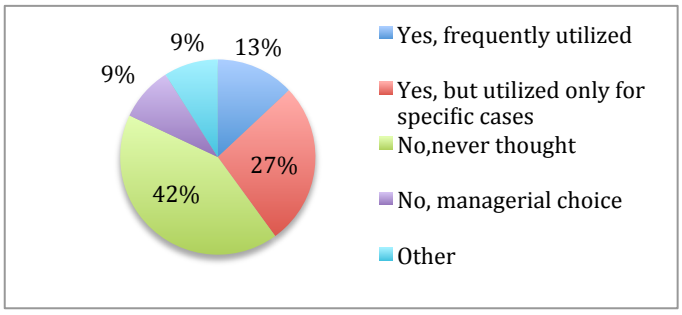
50% of the firms interviewed do not give any incentives to their collaborators. They may never have considered the possibility, or they may not understand the advantage that this investment could give to the company. Finally, only a few firms give concrete incentives: only 3% monetary and only 6% free time. However, 34% answered that they do not give incentives because they are not needed and, in knowledge management terms, this is positive because it tells us that their employees share knowledge independently, without the need of any encouragement.

* * * * * * *

Knowledge, and particularly tacit knowledge, must be available to everybody, or at least to the people that need it. In order to achieve this, the management must commit itself by accessing the potential sources of knowledge.

Sooner or later knowledge workers, and all employees in general, will leave the company; some will retire, others will change workplace. Unless these departures are well-managed, they will result in a lack of knowledge in the company. In order to avoid this situation, the head of the company must think proactively: for example, by organizing times in which experienced employees can transmit their tacit knowledge to new collaborators. A sort of coaching process can help and facilitate this exchange, and is therefore generally welcomed.

Figure 36: Do you have projects, times, activities, which aim at knowledge transfer between experienced employees and young workers?



Source: Own elaboration

The results for this question are not very positive: 42% answered that they do not apply such practices because they have never considered them, 27% organize such projects but only in specific cases, 13% utilize these frequently and 9% do not operate knowledge transfer projects between experienced employees and young workers as a result of management choice. I believe that this situation presents a high risk of knowledge loss and I hope that the companies that have never previously considered the issue will reflect on it and decide to introduce projects aiming to transfer tacit knowledge between experienced and inexperienced workers.

Table 14: Knowledge transfer between experienced employees and young: Sector

Years of activity	No	Yes, but only for certain cases	Yes, always	Total
0-20	14	7	11	32
	43.75%	21.88%	34.38%	100%
21-35	9	8	3	20
	45.00%	40.00%	15.00%	100%
35-more	38	15	5	60
	62.52%	25.86%	8.62%	100%
Total	**61**	**30**	**19**	**110**
	55.45%	**27.27%**	**17.28%**	**100%**
Personal chi2(2) = 17.2798 Pr = 0.008				
Likehood-ratio chi2(2) = 15.0822 Pr = 0.020				
Fisher's exact = 0.011				

Source: Own elaboration

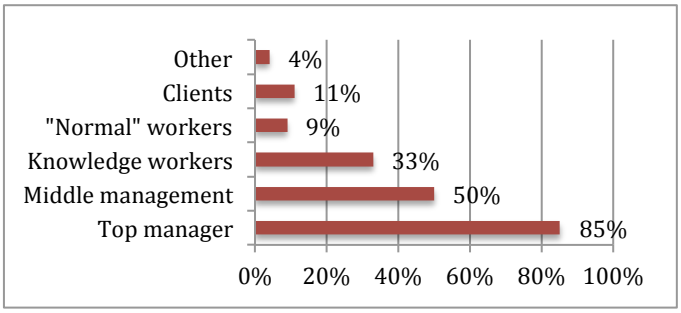
The chi-squared statistical test showed that it was possible to find a relationship with the variable "years of operation". The oldest firms seem less willing (65%) to apply such projects. These firms probably do not see the need, although they have probably already lost some knowledge in the past. Young companies are more likely to transfer knowledge between the two "generations" of employees, both frequently and also in specific cases. In comparison with the old firms the "middle-old" firms are more willing to adopt such projects but mainly in specific cases but, compared to the young companies they are less likely to do this frequently.

3.1.2.3- Use tacit knowledge

In order to benefit the company, tacit knowledge must be used: it is useless to have knowledge that remains in the cosmos of the people that have or acquire it. Knowledge can be transformed into improvements, projects, inventions and perhaps into innovations. Trying to exploit the tacit knowledge present in the employees should be one of the core activities of management.

The examples referred to above do not mention the importance of the role played by knowledge workers in strategy development. In this specific question the firms were asked about the people who participate in the development of the firm's strategy. Pasher & Ronen (2011) say that it is important that as many people as possible are involved in this fundamental activity because top managers perhaps do not see the viewpoints of other hierarchical levels and, in addition to this, employees with specific capabilities can influence the strategy in order to facilitate the "use" of their knowledge and give their particular opinions.

Figure 37: Who interacts in the development of corporate strategy?



Source: Own elaboration

The firms could select five multiple answers: top managers (85%), middle managers (50%), knowledge workers/workers with special capabilities (33%), normal workers (9%), others (11%). The situation seems neither very good nor very bad: the top managers are logically involved, the middle management are strangely taken less into consideration. The low percentage of knowledge workers can be identified with a lack of trust from the managers to the employees. I sensed this attitude in many of the companies I visited during the period of my bachelor studies.

Table 15: Who interacts in the development of corporate strategy: Years of operation

Years of activity	Just knowledge workers	Just top managers	Top managers and knowledge workers	Total
0-20	0	11	17	28
	0.00%	39.29%	60.71%	100%
21-35	2	11	3	16
	12.50%	68.75%	18.75%	100%
35-more	1	40	18	59
	1.69%	67.80%	30.51%	100%
Total	**3**	**62**	**38**	**103**
	2.91%	**60.19%**	**36.89%**	**100%**
Personal chi2(2) = 15.3459 Pr = 0.004				
Likehood-ratio chi2(2) = 13.8302 Pr = 0.008				
Fisher's exact = 0.005				

Source: Own elaboration

This question examines how "years of operation" can affect those who interact in the development of the corporate strategy. In order to show the results more effectively, it was decided to divide the firms interviewed into three main classes: those that involve only employees with specific characteristics, those that include only the top management and the third group, consisting of firms that involve both top managers and knowledge workers. The results show that young firms (0-20) are more inclined to incorporate both the head of the company and employees with specific characteristics. This is a positive trend, which however is not found in the old firms (35 and more) that, with a percentage of 60%, are more willing to involve only the top management. Presumably, "fresh" companies have a much greater need of support and they therefore utilize the best possible internal resources, trying to involve the best minds in the company in the strategy development process. Another explanation can be linked to education: it may possible

to assume that "new" firms have managers who are relatively fresh from their studies and who have therefore learnt the advantages of putting together a number of different intelligences.

Table 16: Who interacts in the development of corporate strategy: Size of the firm

Years of activity	Just knowledge workers	Just top managers	Top managers and knowledge workers	Total
1-9 (Micro)	2	13	12	27
	7.41%	48.15%	44.44%	100%
10-49 (Small)	0	23	19	42
	0.00%	54.76%	45.24%	100%
50-more (Big)	1	26	6	33
	3.03%	78.79%	18.18%	100%
Total	**3**	**62**	**37**	**102**
	2.94%	**60.78%**	**36.27%**	**100%**
Personal chi2(2) = 10.1920 Pr = 0.037				
Likehood-ratio chi2(2) = 11.3638 Pr = 0.023				
Fisher's exact = 0.018				

Source: Own elaboration

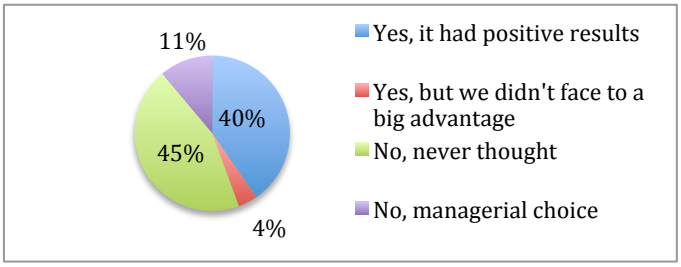
The size of the firm also shows a relationship with this question. The figures appear to indicate that large firms, which are presumably generally older than small firms, are likely to involve only top managers. This can be directly related to the previous table. The results for micro and small firms are rather divided: in both categories, half of the companies are willing to involve both the top management and knowledge workers, while the other half prefers to involve just top management. The trend is not negative but it can be improved.

Both tables show that only a few firms are willing to involve exclusively knowledge workers (first column). I believe that this is positive because workers, also those with specific capabilities, will probably not be able to understand all the issues related with management activities. It might be interesting to create two groups: one created by the top management and the second by "normal" and knowledge workers: after an initial consultation in separate groups, they would be put together and would try to incorporate their different ideas, viewpoints, needs, etc. into one single strategy, which would finally guarantee the company a comprehensive and useful strategy.

* * * * * * *

Job rotation means taking people away from their daily jobs and allocating them to other departments or to other functions, allowing employees to acquire important knowledge and experience. The project can be temporary or indefinite, depending on the needs of the company. According to Nonaka, Toyama & Konno (2000) and Pasher & Ronen (2011), job rotation can be very useful for knowledge workers, who generally have specific, technical knowledge. Through job rotation they will be able to acquire more knowledge about other aspects of the company and perhaps manage to link these two knowledge types, generating good ideas, project, inventions, etc..

Figure 38: Have you ever tried to implement a job rotation project?



Source: Own elaboration

The "No" answers still prevail (45% have never considered it and 11% have not considered it due to management choice). However, it is important to note that that 40% of the firms interviewed have already implemented this with positive results, and just 4% put it into practice without having recorded any advantages. Implementing job rotation can also generate a sense of trust because the people involved will see what the other employees/departments do, increasing the sense of respect. There is one problem with no solution, however, related to the fact that not every position can be rotated: it would be very difficult for a sales manager to take the place of a mechanic supervisor.

Table 17: Job rotation project: Region

Region	No, never applied	Yes, applied	Total
Luganese	30	24	54
	55.56%	44.44%	100%
Mendrisiotto	25	12	37
	67.57%	32.43%	100%
Sopraceneri	6	13	19
	31.58%	68.42%	100%
Total	**61**	**49**	**110**
	55.45%	**44.55%**	**100%**
Personal chi2(2) = 6.5824 Pr = 0.037			
Likehood-ratio chi2(2) = 6.6636 Pr = 0.036			
Fisher's exact = 0.038			

Source: Own elaboration

It has been possible to identify a relationship between the question related to "job rotation" and the variable "region". In order to ensure that the results were represented well, two main classes had to be created: the first consists of those that have implemented this project, while those who have not were allocated to the second class. "Luganese" and "Mendrisiotto" are seen to be less likely than "Sopraceneri" to apply job rotation projects. This result seemed strange because in the other relationships identified the "Sopraceneri" region appeared less likely to implement knowledge management initiatives, while in this specific case the opposite is true. I cannot find any explanation for this evidence, but further research on the issue will probably clarify the results.

3.1.2.4- Summary of the main results

This final section will comment on all the results in general terms. The next sub chapter will answer the hypotheses drawn up during the theoretical part.

Following a brief grouping process, it was possible to begin analysing the results of the questionnaires. From the first question it seemed that the firms from Southern Switzerland are interested in the topic and identify it as an important source for the well-being of the company.

The analysis was structured following a simplified model of the APQC knowledge flow model, which divides the knowledge process into 3 phases: create tacit knowledge, share tacit knowledge and finally use tacit knowledge.

Regarding the first question, it seems that most of companies interviewed focus on the potential of tacit knowledge during the recruitment phase, and the "Lugano" region is likely to implement this concept. The spontaneous grouping of people, also called "communities of practices", is present in approximately 50% of the companies; spontaneous activities are also well supported by the fact that most of the companies prefer informal and face to face meetings.

The areas of interaction play an important role, although unfortunately only a small percentage of the companies are concerned about the physical importance of the meeting places. The tertiary sector and the "middle" old (21-35 years) firms are more likely to implement this measure. However, interaction cannot take place with space alone, since time is also required, and the firms interviewed are moving in this direction: some allocate time for these activities during the work period, while others do not, but it appears that most of the employees organize their own activities; the tertiary sector seems the most inclined to grant these concessions. The resources, space and time must be considered because without them a company will find it very difficult to create informal interaction between employees.

The Ticino firms gave a positive result regarding training, especially because most of them involve their employees in both internal and external training programmes, making it possible to share internal knowledge and acquire new knowledge from the outside.

The question of tacit knowledge management actors being "knowledge workers" who should generally be treated in a different way was answered negatively by firms from Southern Switzerland (58%); in other words they do not manage knowledge workers differently; I believe that this result is not so negative because it avoids a social stratification and at the same time increases trust and friendship between employees. The sense of trust and the consequent sense of feeling free to express their own opinions, which is a fundamental element in tacit knowledge management, must be facilitated by the hierarchical structure that should be as horizontal as possible. The results show a very positive trend: most of the companies have a horizontal hierarchical structure and their employees express trust both in their colleagues and in the different hierarchical levels. The tertiary sector is more likely to have a "flat" structure without any differences in terms of the size of the firm.

The creation and the sharing of tacit knowledge can often be stimulated and facilitated through activities that can be organized internally or externally to the company. Here, from the 50% for general activities to the 60% of activities outside the firm, the companies interviewed answered positively, and the "Sopraceneri" region seems more focused on such activities than the other two (Luganese and Mendrisiotto).

In today's economy people hear more and more the terms: teams and meetings. These words are meaningful in knowledge management, and firms were specifically asked about their cross-department teams and meetings. The firms analysed were seen to be likely to use cross-department teams, particularly for specific projects, but less willing to organize cross-department meetings. The "old" companies and the large companies are the most willing to adopt such management activities.

Although ICT systems are not the best solution for managing tacit knowledge from beginning to end, they can be used to help collect data or, for example, to structure a knowledge map. This belief is also reflected in the results: in fact, unsurprisingly, not all the firms have ICT systems of this type. In order to analyse, or rather to review, knowledge, it is possible to adopt other forms of action, such as the After Action Review (AAR). 50% of the companies use the AAR or similar activities that aim to review actions and that involve all the actors that have taken part.

Knowledge sharing between workers could be stimulated by giving different types of incentives to those who demonstrate willingness to participate in such activities. The questionnaire appears to show that just some of the firms give such forms of motivation. However, there is a positive aspect related to the lack of need for incentives, since in these companies employees share tacit knowledge without the having to be motivated by money, free time or other types of "rewards".

Experienced employees carry with them an amount of knowledge and the management must ensure that this knowledge does not leave the company if the worker changes workplace or retires. Knowledge transfer projects between experienced employees and young or inexperienced employees are advisable. This practice appears to be little implemented in Ticino firms, although "young" firms are likely to do so. Failure to transfer this knowledge puts the company at risk of losing an incredible amount of learning. In relation to this last point, the firms were asked if they had ever noticed a loss of knowledge because of the departure of an employee: the majority answered positively, although arguing that they had always been able to fill the gap.

Strategy is usually drawn up by the top management without any involvement of the other hierarchical levels. It has been argued that strategy must be developed through the interaction of many perspectives, and the knowledge worker perspective can definitely be useful. Ticino is seen to be relatively old-fashioned, and the companies are less likely to involve knowledge workers in the preparation of these documents. "Young", "micro" and "small" firms are the only ones to record a relatively positive trend.

"Job rotation" is another way in which to utilize the tacit knowledge present in the company, since people will interact with different employees, sharing experience and knowledge; working in this way will allow the whole firm to gain knowledge. The questionnaire gave the following results: 40% implemented job rotation with good results, and more than 50% implemented it but without any positive results. The "Sopraceneri" region is the most likely to implement this type of project.

In general, it can be said that the situation of Southern Switzerland is better than I expected, although there are points of progress that will be discussed in the chapter dedicated to the improvements. There are two variables that seem to have strong relationships, in nearly all the questions (where analysed): "region" and "sector". The Sopraceneri's region and the tertiary sector represent the firms that more effectively implement tacit knowledge management practices and activities. This affirmation does not mean that the other firms do not implement them, but that they are less likely to invest in such projects. On the contrary "Mendrisiotto" and primary sector are represent those firms that less are oriented too the tacit knowledge management, while the secondary sector show middle strong results. "Luganese" is a variable to manage with care because from a general perspective it seems not to be the best region, however from the results it appears to be very close to "Sopraceneri" and stable in all the answers, consequently I would like to say that also this region is strong in term of tacit knowledge management. The other two variables also record significant results, as seen above, but the relationships are quite different depending on the question. The following table I am going to present a sum of the main results, with a focus on the general situation of Southern Switzerland an on the best groups of firms for each variable (sector, region, years od activity and firm's size).

Table 18: General overview on the results

	Ticino	Region	Sector	Years of activity	Firms' size
Q1: recruitment	☺	Luganese	---	---	---
Q2: Communities of practices	😐	---	---	---	---
Q3: Types of meeting preferred	☺ Informal, workshops and brainstorming	---	---	---	---
Q4: Studied areas	😐	---	Tertiary	21-35 years	---
Q5: Trainings	☺	---	---	---	---
Q6: management of knowledge workers	😐	---	---	---	---
Q7: hierarchical structure (horizontal)	☺	---	Tertiary	---	All
Q8: interaction with the outside	☺	---	---	---	---
Q9: trust in colleagues	☺	---	---	---	---
Q10: trust in the hierarchy	☺	---	---	---	---
Q11: feeling free to express	☺	---	---	---	---
Q12: activities to enable expression	😐	Sopraceneri	Tertiary	---	---
Q13: cross-dep. teams	😐	---	---	35-more years	50-more employees

Q14: cross-dep. meetings	☹	---	---	---	---
Q15: Outside activities	☺	Sopraceneri	---	---	---
Q16: ICT system	😐	---	---	---	---
Q17: project on KM	☹	---	---	---	---
Q18: AAR concept	😐	---	---	---	---
Q19: area for interaction	😐	---	---	---	---
Q20: Time to share	😐	---	Tertiary	---	---
Q21: Incentives	😐	---	---	---	---
Q22: Interactions preferred	☺	---	---	---	---
Q23: share between old and new employees	☹	---	---	0-20 years	---
Q24: lost of knowledge	☺	---	---	---	---
Q25: development of the strategy	☹	---	---	0-20 years	10-49 employees
Q26: job rotation	😐	Sopraceneri	---	---	---

Source: Own elaboration

3.2- Responses to the hypothesis

This chapter will answers the hypotheses resulting from the theoretical part. The chi-squared statistical analysis makes it possible to respond with various elements, also related to sector, region, size of the firm, years of operation.

Hypothesis 1: *Firms from Southern Switzerland have managerial tools to develop and exploit the internal tacit knowledge.*

It can be argued that firms from Southern Switzerland have managerial tools that might help them to manage tacit knowledge inside the company. These tools will be listed in terms of the responses given (more than 50%, around 50% and finally these that have been "voted" less than 50%).

- <u>Over 50%</u>
  - Recruitment process
  - Informal and face-to-face meetings
  - External and internal meetings
  - Horizontal hierarchical structure
  - Activities outside the firm's boundaries
  - "After Action Review" activities
- <u>Around 50%</u>

- Cross departmental teams/meetings
- Activities to transfer knowledge between experienced employees and young workers
- Job rotation

- Less than 50%
  - Areas and time given to employees to use for creating and sharing knowledge
  - Incentives to stimulate interaction and knowledge sharing
  - Involvement of knowledge workers in the strategy development process

The results indicate that the situation in the region is positive, although there is clearly potential for improvement, which I believe is essential.

Hypothesis 2: *Firms from Southern Switzerland utilize cross-departmental team-working.*

Cross-departmental teams and cross-departmental meetings are used but not by the majority of the firms. The statistical analysis made it possible to identify older and bigger firms as those more likely to adopt team-working activities of this type.

Hypothesis 3: *Firms from Southern Switzerland facilitate and stimulate the creation of communities of practice/informal networks.*

Unfortunately only 50% of the firms have such groups of workers. It is also true that resources (space, time, etc.) are required in order to stimulate the creation of such entities, together with a culture supporting and promoting these initiatives. It will be shown below that less than half of the firms invest in such resources.

Hypothesis 4: *Firms from Southern Switzerland have physical places that can facilitate knowledge exchange.*

Firms have rooms for interaction but only half of the firms questioned had studied them in order to facilitate the exchange of knowledge, while the remaining firms had not considered the possibility, probably because they had not understood the advantages hidden behind these organisational areas that should act as a magnet for people that are motivated to meet each others there, exchanging knowledge and experiences.

Hypothesis 5: *Firms from Southern Switzerland take into account the tacit knowledge of people before hiring them.*

Surprisingly, most of the companies take into account the potential tacit knowledge of people before hiring them. The relationship with the region variable identifies “Luganese” as the region where

companies are mostly more willing to consider this factor as an evaluation element during the selection phase.

Hypothesis 6: *Firms from Southern Switzerland involve employees (not managers) in the elaboration of the strategy.*

Only a few firms are willing to involve employees and knowledge workers in the elaboration of the strategy. In this poor result, young firms are more likely to involve "non-managers", while big firms are more willing to let the top management do the work by elaborating the strategy on its own.

Hypothesis 7: *Firms from Southern Switzerland have horizontal hierarchical structures.*

The vast majority of the companies have horizontal structures, which is a fundamental prerequisite for an organisation aiming to exchange its tacit knowledge internally. Although all sectors demonstrate horizontal structures, the tertiary sector is the one that does so to the greatest extent.

Hypothesis 8: *Firms from southern Switzerland give resources (time and space) to collaborators, enabling them to share knowledge and to establish a proper organisational culture.*

Firms are generally less willing to give time, some of them argued that their employees find time independently outside work-time, when they meet and share knowledge with each other. The tertiary sectors, and the "Luganese" and "Sopraceneri" regions appear to contain the groups of firms that give time to the collaborators. In terms of space, as seen above, more than half of the firms interviewed do not see interaction areas as a fundamental part of company management and are consequently less willing to invest in it. Resources can also be translated into activities oriented toward the exchange of knowledge, which are managed partially by the management and partially by the employees independently; they can be conducted both inside or outside the boundaries of the firm. The statistical analysis appears to indicate that the tertiary sectors, and also the "Luganese" and "Sopraceneri" regions, are more inclined to invest in such practices.

Hypothesis 9: *Firms from Southern Switzerland give their employees the opportunity for job rotation.*

Many firms implement this, but only 40% achieve positive results. The remaining 60% have never considered the possibility or have decided against implementing a rotation project. Only 5% involve the organisation in a job rotation process without positive results. So, if applied, this makes a positive impact. The "Luganese" and "Sopraceneri" regions record better outcomes.

Hypothesis 10: *Firms from southern Switzerland give rewards to employees who create or share knowledge.*

The vast majority of the firms interviewed answered "no" but half of them said that in their firms rewards or material incentives are not needed in order to motivate the employees to share knowledge. This last element is positive, however incentives can be useful for firms that just started to create a knowledge management structure.

Hypothesis 11: *Firms from Southern Switzerland give new employees the opportunity to gain knowledge from experienced workers.*

Only 50% of the firms implement projects of this type. This specific result is worrying because it means that these companies risk a huge loss of knowledge. However, young and middle-aged companies are those that more implement knowledge exchange activities in order to transfer knowledge from experienced to young employees.

Answering the hypothesis gives a good overview of how firms from Southern Switzerland manage their tacit knowledge, so in the next chapter it will be possible to identify some potential improvements that can be recommended to the companies. In any case, I believe that this questionnaire has been useful because it has provided the firms interviewed with a point for reflection, and for some of them this might be a starting point for transforming the company into a type of knowledge firm that aims to develop its knowledge assets by creating, sharing and using them.

4- Suggestions for improvement

This chapter contains a brief description of my personal recommendations to the companies that responded to the questionnaire, and that can then use these recommendations to improve their tacit knowledge management. In the months after the completion of this thesis I will then write a short report giving the main results and the recommendations.

This section will consider the results that I believe are insufficient, and will then give my personal opinion on how to improve these results.

- Communities of practice

First of all the management should try to identify communities of practice because perhaps they already exist but have not been identified. Secondly, the head of the company should stimulate the natural interaction of people, for example through activities unrelated to daily business.

- Areas studied to encourage knowledge exchange

It must be considered that these areas are places where people think and interact. Both these activities must be stimulated and the environment plays an important role. I will try to clarify the concept by means of an example: people can be on holiday but, in August, they will feel better in a hotel at the

seaside rather than in a small apartment in the middle of a city. The environment and the activities that can be conducted, for example in the break area, must stimulate interaction.
Young and old firms should focus more on this idea.

- Treatment of knowledge workers and their involvement in the elaboration of the strategy

I believe that they must be treated in the same way as the other workers but they should be integrated more into the management activities: for example, in strategy development.

- Activities that enable people to express their tacit knowledge

The management must organize, or leave people free to organize, activities that make employees willing to express their tacit knowledge.
Primary and secondary sectors, as well as the "Mendrisiotto" region, are those more strongly affected by this deficiency.

- Cross-departmental meetings

I believe that these meeting are a fundamental element of knowledge management. Departments must speak to each other and one way in which this can be achieved is by means of meetings that can be organized daily, weekly, etc.. These meetings can create a certain sense of belonging and a culture that fosters and facilitates the management of tacit knowledge .

- After Action Review

The firms should not think about AAR simply in terms of tacit knowledge management, but also generally as a tool for receiving a direct and immediate feed-back. Large amounts of resources are not required, only time and people. With this system everybody expresses their opinions and everybody knows everything.

- Area for interactions

Those firms that implement these but do not use them much should check if their employees have the time to benefit from them, and if the management does anything to stimulate them to use these areas. It is possible to relate these answers to the previous point regarding the "Areas studied to encourage knowledge exchange".

- Time to interact

People need time to exchange experiences and knowledge and it might be advisable to give them this time during the working day. If this is not possible, it would also be advisable to organise time through external activities. The secondary sector seems to be the one with the greatest need for improvement in this area.

- Incentive to stimulate knowledge exchange

Some firms answered that they did not need this because their employees are willing to independently interact and share tacit knowledge. In the firms that have never considered incentives as an important element, the management could, as starting point, give some rewards to employees who demonstrate willingness to share their knowledge or who are active in interactions with other workers, both at the same level and with the superior/lower hierarchical levels.

- Activities to exchange knowledge between experienced and young employees

This result was truly surprising and, I believe, must be improved. New employees must be monitored by experienced workers so that tacit knowledge is transferred from one to the other one. This could be achieved by working together or by means of coaching activities. This could also be a solution for companies that lose a collaborator but do not want to lose her/his knowledge as well.

- Interaction in the strategy development process

I believe that knowledge workers must be involved in the elaboration of the strategy. This can be implemented in two ways: involvement during the "management" workshop, or it is also possible to envisage two different workshops, one of knowledge workers and the other of managers. The final results of both groups must then be analysed and put together.
The firms that most need to improve in this area are "middle old", "old" and big companies.

- Job rotation

Firms must generally implement more job rotation activities, asking people to change their workplace while still remaining in the same professional area. It could be interesting to rotate employees around different branches or, as far as possible, inside the company between departments.

This brings the analysis part to a close. Some results were surprising, while others were as expected. In this part it seemed clear to me that further and more in-depth analysis is required. Many outcomes can be used as a starting point for further research.
Ticino generally demonstrates a positive trend; however some elements and practices can be implemented in order to improve tacit knowledge management.

6- Conclusion

Knowledge plays an important role in the modern economy, because only knowledge brings ideas, inventions and innovation, particularly if it is shared and mixed between the different actors of an organisation. Knowledge can be acquired from external partners or cultivated internally in the company. Nonaka & Takeuchi (1995) state that it is possible to identify two types of knowledge: tacit

and explicit. I decided to focus on the second category, the more abstract, the one that is almost completely influenced by human beings, their characteristics, behaviour and experiences.

In this project I have tried to go inside the topic and discover how this resource can be used to benefit a company, focusing inside the company, or, in other words, on the tacit knowledge that already exists inside the boundaries of the firm. The subject has been analysed firstly from a theoretical perspective and secondly, the project was completed by means of a regional analysis.

I chose this topic mainly because I am very interested in the topic of knowledge in general, and particularly in the specific area of tacit knowledge. This interest was stimulated during my military career, when I learned how the importance of understanding the characteristics of individual soldiers, and of trying to identify modes in which to exploit these unique features in a way that would benefit the whole platoon. Moreover, I wanted to do a project that would benefit Southern Switzerland.

The general aim of my thesis was to understand how firms from Southern Switzerland manage their tacit knowledge, and to define potential improvements to their management. In order to achieve this goal, the existing literature was first analysed, providing the opportunity to develop a questionnaire that was sent to approximately 600 companies. The response rate was 20%, making it possible to analyse the results and make some potential recommendations.

The main results collected show a good trend, although some firms have strong potential for improvement. Some questions recorded the expected positive/negative results, while other responses were unexpected, in both positive and negative terms. From a regional aspect, the “Sopraceneri” and “Luganese” are the regions more willing to adopt tacit knowledge practices, as well as the tertiary sector, which is definitely more oriented toward knowledge management than the other two sectors. The variables “years of operation” and the “size of the firm” do not demonstrate significant trends; the tendencies were much more related to the different questions. Presumably, “region” and “sector” variables are more likely to relate to the topic of tacit knowledge in the specific case of Southern Switzerland.

Limitations and further research

In this thesis I have tried to give a general overview of tacit knowledge and how it is managed in the region of Southern Switzerland. Much more can still be done and researched, and this project does not cover all the theoretical or practical elements.

The breadth of the topic means that it is possible to identify some limitations: firstly, not all the variables (sector, region, years of operations and size of the firm) are covered with the same critical mass, which can lead to situations where the credibility of the answer is not hundred per cent guaranteed. Moreover, I had the impression that some questions had not been fully understood by the people answering the questionnaire.

This master thesis must be seen as an individual project, but also as a starting point for further research. Some ideas that could be developed are listed here below:

- Analyse the concept of a "knowledge map".
- Study the phenomena through one or many case studies.
- The same study, but with the perspective of external actors, and how this can be acquired.
- Conduct the same analysis but in a different region that can be close to or far from Southern Switzerland (other regions of the Switzerland, Italy if it is preferred to stay nearby, or any other nation/region).
- In general, all the questions can be discussed in greater depth.

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Attached files

The original questionnaire (in Italian)

La gestione della conoscenza tacita nelle aziende ticinesi.

Gentili Signore, Egregi Signori,

in collaborazione con il "Swiss Knowledge Management Forum", nell'ambito nell'ambito della mia tesi di master, si e deciso di monitorare la gestione della conoscenza presente sul nostro territorio cantonale.

Mi presento brevemente:
mi chiamo Federico Chiesa (1984), abito a Comano. Attualmente sto svolgendo l'ultimo semestre di master presso l'università di Aalborg (Danimarca). L'indirizzo da me scelto è: "Innovation, Knowledge and Entrepreneurial Dynamics".

L'obiettivo di questo semestre è quello di elaborare un progetto di tesi relativo ad una tematica trattata durante gli altri tre periodi scolastici.
Il tema di ricerca da me scelto è il seguente: "La gestione della conoscenza tacita nelle aziende ticinesi". Lo scopo ultimo è quello di capire come le aziende del nostro cantone coordinino questa preziosa risorsa ed individuare possibili misure di miglioramento.

Come è possibile citare:

"la conoscenza tacita è la fonte di un ampio raggio di opportunità e un potenziale per scoperte, creatività ed innovazione".
(Seidler-de Alwis & Hartmann, 2008).

Una volta conclusa la tesi sarà mia premura preparare e farvi avere un riassunto dei principali risultati con allegati eventuali consigli.

Vi chiedo gentilmente di compilare questo mio breve questionario così da permettermi di disporre di un numero sufficiente di dati per sviluppare al meglio il mio progetto di tesi. Il tempo massimo stimato di redazione é di 10 min.
Vi chiedo gentilmente, nel limite del possibile, di compilare il questionario entro mercoledì 4 aprile 2012.

NB: TENGO INOLTRE A PRECISARE CHE I DATI SARANNO ELABORATI CON LA MASSIMA CONFIDENZIALITÀ E RISPETTANDO L'ANONIMATO.

Vi ringrazio anticipatamente per l'aiuto e vi auguro ogni soddisfazione, professionale e privata.

Cordiali saluti
Federico Chiesa

P.s.: Potrete notare che in tutte le domande ho aggiunto la casella "altro", questo ha lo scopo di permettervi di aggiungere un commento a qualsiasi domanda vogliate.
*Campo obbligatorio

Nome dell'azienda

In che settore operate? *

Scelta

Da quanti anni é attiva la vostra azienda? *

In anni

Scelta

In che regione geografica vi trovate? *

Sede principale in Ticino

Scelta

Qual'é la grandezza della vostra azienda *

Nel caso di aziende nazionale i/internazionali, relativo alla sede situata in Ticino

Scelta

In termini generali, che peso date alla conoscenza tacita dei vostri

collaboratori? *

Conoscenza tacita = é la conoscenza personale, difficile da formalizzare. È racchiusa in azioni, procedure, valori e emozioni. Viene acquisita tramite interazioni ed esperienze.

	1	2	3	4	5	
Poca	◯	◯	◯	◯	◯	Molta

Creare conoscenza tacita

Nella seguente sezione risponderete a delle domande relative alla vostra gestione nel creare della conoscenza tacita.

Durante il processo d'assunzione , tenete conto del potenziale di conoscenza tacita presente nell'aspirante?

Se sì, aggiungere in "altro": in che modo

- ◯ Sì
- ◯ No
- ◯ Altro: _____

Avete delle "comunities of practices"?

comunities of practices= Una rete di colleghi, informale, auto-organizzata, con competenze ed esperienze diverse: il tutto all'interno di un'area di pratica o di professione. Tali gruppi sono tenuti insieme dal desiderio dei soci di aiutare gli altri (per la condivisione di informazioni) e la necessità di incrementare/migliorare le proprie conoscenze

- ◯ Sì
- ◯ No

Durante la vostra attività, che tipologia di incontri svolgete? (Indicare nel box quello che secondo voi garantisce una maggiore crescita in termine di conoscenza tacita)

Scelta multipla

- ☐ Incontri informali
- ☐ Incontri formali (riunioni giornaliere)
- ☐ Workshops
- ☐ Brainstorming
- ☐ Altro: _____

Le aree all'interno dell'azienda sono state studiate, dal punto di vista visivo e fisico, per stimolare la discussione e lo scambio di idee/esperienze tra i collaboratori?

- ◯ Sì, ma solo le zone di lavoro
- ◯ Sì, ma solo i locali di pausa/svago
- ◯ Sì, tutte le aree
- ◯ No

Ai vostri dipendenti vengono offerti dei corsi di formazione?

- ◯ Sì, ma solo interni all'azenda
- ◯ Sì, ma solo esterni all'azienda
- ◯ Sì, entrambe
- ◯ No

Gestite in maniera diversa i "knowledge workers" (lavoratori con particolari capacità e conoscenze) rispetto al resto delle risorse umane aziendali?

Se sì, aggiungere in "altro": in che modo

- ◯ Sì
- ◯ No
- ◯ Altro:

Come rappresentereste la vostra struttura gerarchica?

- ◯ Orizzontale (pochi piani gerarchici)
- ◯ Verticale (molti piani gerarchici)
- ◯ Altro:

Identificare la conoscenza tacita

Nella seguente sezione risponderete a delle domande relative alla vostra gestione nell'identificare la conoscenza tacita.

Interagite con attori esterni?

scelta multipla

- ☐ Univeristà
- ☐ Altre aziende
- ☐ Istituzioni
- ☐ Centri di trasferimento della tecnologia e della conoscenza
- ☐ Nessuno
- ☐ Altro:

I vostri collaboratori dimostrano fiducia verso i propri colleghi?

- ◯ Sì

- ◯ Sì, ma solo con i membri del proprio team
- ◯ No
- ◯ Altro:

I vostri collaboratori dimostrano fiducia verso i diversi piani gerarchici?

- ◯ Si
- ◯ Sì ma solo verso il livello più vicino a loro
- ◯ No
- ◯ Altro:

I vostri collaboratori si sentono liberi di esprimere la propria opinione?

- ◯ Sì, con chiunque
- ◯ Sì, ma solo con i colleghi stretti
- ◯ Nessuno
- ◯ Altro:

Collezionare/allenare la conoscenza tacita

Nella seguente sezione risponderete a delle domande relative alla collezione e all'allenamento della conoscenza tacita.

Disponete di attività che permettano ai collaboratori di esprimere la propria conoscenza tacita?

Se sì, aggiungere in "altro": in che modo (una breve descrizione)

- ◯ Sì
- ◯ No
- ◯ Altro:

Disponete di team cross-dipartimentali?

Cross-dipartimentali = persone di diversi dipartimenti/team che interagiscono tra loro alla ricerca di soluzioni o allo sviluppo di novità.

- ◯ Sì
- ◯ Sì, ma solo ad hoc per progetti specifici
- ◯ No
- ◯ Altro:

Disponete di meeting cross-dipartimentali?

Cross-dipartimentali = persone di diversi dipartimenti/team che interagiscono tra loro alla ricerca di soluzioni o allo sviluppo di novità.

- ◯ Sì
- ◯ No
- ◯ Altro:

Nella vostra azienda vengono organizzate delle attività fuori dall'ambito lavorativo?

Se sì, aggiungere in "altro": che tipologia di attività vengono organizzate

- ◯ Sì, di frequente
- ◯ Sì, ma raramente
- ◯ No
- ◯ Altro:

Avete un sistema ICT (information, comunication & technology), informatico, che vi aiuta a raggruppare, gestire, per quanto possibile la conoscenza tacita presente nell'azienda?

- ◯ Sì
- ◯ Sì, ma non viene utilizzato
- ◯ No
- ◯ Altro:

Rivedere/analizzare la conoscenza tacita

Nella seguente sezione risponderete a delle domande relative alla revisione, all'analisi e alla valutazione della conoscenza tacita.

Avete già sviluppato un progetto specifico sulla gestione della conoscenza?

Se sì, aggiunge in "altro": lo scopo che questa attività aveva

- ◯ Sì e abbiamo raggiunto l'obiettivo
- ◯ Sì, ma é stato un fallimento
- ◯ Vi abbiamo pensato ma non l'abbiamo mai messo in pratica
- ◯ No, non é mai entrato in linea di conto
- ◯ Altro:

Disponete di un concetto di AAR?

AAR = After Action Review = dopo un'azione o alla fine di un progetto viene implementata una revisione strutturata/de-briefing per analizzare quello che è successo, perché è successo, e come può essere fatto meglio. Chiunque vi abbia preso parte é attivo all'interno dell'AAR, siano essi quadri o collaboratori.

- ◯ Sì
- ◯ Sì, ma solo i quadri ne prendono parte

- ◯ Disponiamo di un sistema simile ma strutturato in maniera diversa
- ◯ No
- ◯ Altro:

Condividere la conoscenza tacita

Nella seguente sezione risponderete a delle domande relative alla condivisione della conoscenza tacita.

La vostra azienda dispone di un'area nella quale il personale ha la possibilità di interagire in maniera informale e scambiare esperienze e conoscenza?

- ◯ Sì, viene utilizzata molto
- ◯ Sì, viene però utilizzata poco
- ◯ Sì, ma non viene utilizzata
- ◯ No, non vi abbiamo mai pensato
- ◯ No, scelta aziendale
- ◯ Altro:

I vostri dipendenti dispongono di tempo per condividere esperienze e conoscenze?

- ◯ Sì, concediamo una % del tempo lavorativo per tali attività
- ◯ Non concediamo tempo lavorativo ma organizziamo momenti comuni fuori dalle ore lavorative
- ◯ Non concediamo tempo lavorativo ma i nostri collaboratoti si organizzano autonomamente
- ◯ Non concediamo tempo lavorativo e i nostri dipendenti non sembrano necessitare di tali attività
- ◯ Altro:

w

es: contribuire ad attività di gruppo, discussioni, rispondere a domande, ecc.

- ◯ Sì, monetari
- ◯ Sì, tempo libero
- ◯ No, non é necessario dare incentivi
- ◯ No
- ◯ Altro:

Che tipo di interazioni preferite?

scelta multipla

- ☐ Faccia a faccia informale

- [ ] On-line meetings
- [ ] Via mail
- [ ] Via telefono
- [ ] Altro:

Avere accesso a conoscenza tacita

Nella seguente sezione risponderete a delle domande sulla capacità di accedere alla conoscenza tacita

Disponete di progetti/momenti/attività che mirano al trasferimento di conoscenza tra dipendenti con esperienza e giovani lavoratori?
Se sì, aggiungere in "altro": una breve descrizione

- ( ) Sì, sono programmi che utilizziamo di frequente
- ( ) Sì, ma vengono utilizzati sono in casi specifici
- ( ) No, non vi abbiamo mai pensato
- ( ) No, scelta aziendale
- ( ) Altro:

Utilizzare la conoscenza tacita

Nella seguente sezione risponderete a delle domande sulla capacità di utilizzare la propri sconoscenza tacita

Vi siete mai resi conto di aver perso della conoscenza, p.es alla partenza di un collaboratore?

- ( ) Sì, non siamo più riusciti a colmare la mancanza
- ( ) Sì, ma siamo riusciti a colmare il buco
- ( ) No, non é mai capitato
- ( )
- ( ) Altro:

Chi interagisce nell'elaborazione della strategia aziendale?
Scelta multipla

- [ ] Top manager
- [ ] Quadri intermedi
- [ ] Lavoratori con capacità e conoscenze specifiche
- [ ] lavoratori normali
- [ ] clienti

The original answers (from Google docs)

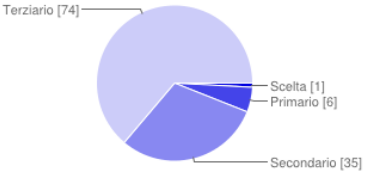
116 risposte

Riepilogo Vedi le risposte complete

Nome dell'azienda

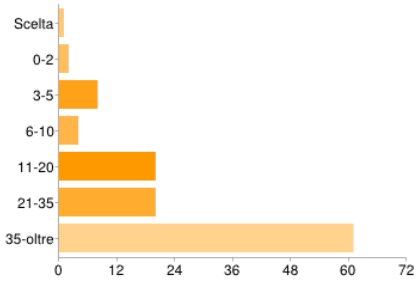
Fondazione Casa San Rocco Maspoli Sa Eyeswiss Eredi Chiesa Studio fiduciario REIPA TRADING SA Green Card SA shea sa Qualicon Consulenze SA Assiconsult SA Marta Brambilla Magazzini Generali con Punto Franco SA ...

In che settore operate?



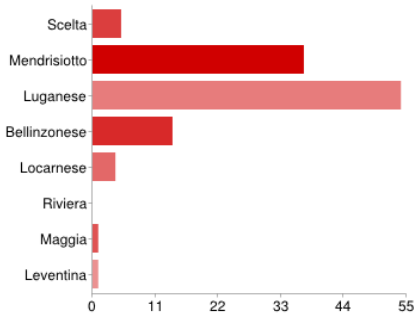
Scelta	1	1%
Primario	6	5%
Secondario	35	30%
Terziario	74	64%

Da quanti anni é attiva la vostra azienda?



Scelta	1	1%
0-2	2	2%
3-5	8	7%
6-10	4	3%
11-20	20	17%
21-35	20	17%
35-oltre	61	53%

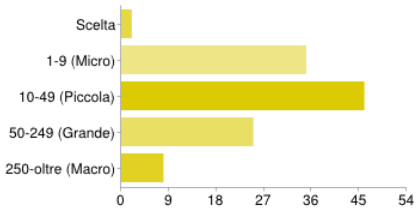
In che regione geografica vi trovate?



Scelta	5	4%
Mendrisiotto	37	32%
Luganese	54	47%
Bellinzonese	14	12%
Locarnese	4	3%
Riviera	0	0%
Maggia	1	1%
Leventina	1	1%

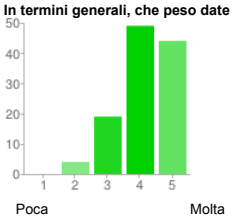
Qual'é la grandezza della vostra azienda

Scelta	2	2%
1-9 (Micro)	35	30%
10-49 (Piccola)	46	40%
50-249 (Grande)	25	22%



250-oltre (Macro)	**8**	7%

In termini generali, che peso date alla conoscenza tacita dei vostri collaboratori?

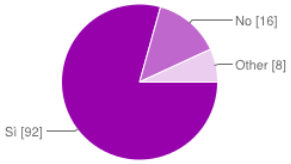


1 - Poca	**0**	0%
2	**4**	3%
3	**19**	16%
4	**49**	42%
5 - Molta	**44**	38%

Creare conoscenza tacita

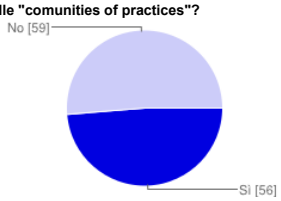
Nella seguente sezione risponderete a delle domande relative alla vostra gestione nel creare della conoscenza tacita.

Durante il processo d'assunzione , tenete conto del potenziale di conoscenza tacita presente nell'aspirante?



Sì	**92**	79%
No	**16**	14%
Other	**8**	7%

Avete delle "comunities of practices"?

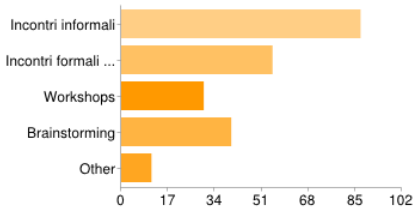


Sì	**56**	48%
No	**59**	51%

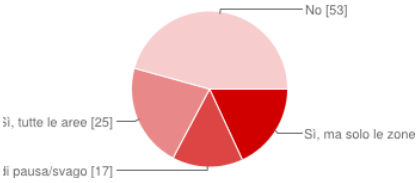
Durante la vostra attività, che tipologia di incontri svolgete? (Indicare nel box quello che secondo voi garantisce una maggiore crescita in termine di conoscenza tacita)

Incontri informali	**87**	76%
Incontri formali (riunioni giornaliere)	**55**	48%
Workshops	**30**	26%
Brainstorming	**40**	35%
Other	**11**	10%

Gli utenti possono selezionare più caselle di controllo, pertanto le percentuali possono dare una somma maggiore del 100%.

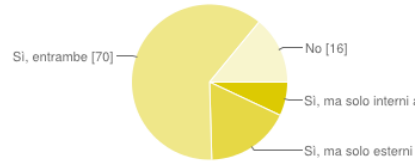


Le aree all'interno dell'azienda sono state studiate, dal punto di vista visivo e fisico, per stimolare la discussione e lo scambio di idee/esperienze tra i collaboratori?



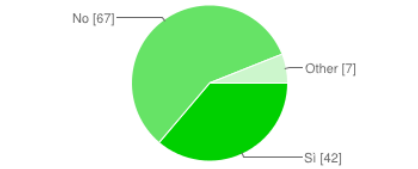
Sì, ma solo le zone di lavoro	**21**	18%
Sì, ma solo i locali di pausa/svago	**17**	15%
Sì, tutte le aree	**25**	22%
No	**53**	46%

Ai vostri dipendenti vengono offerti dei corsi di formazione?



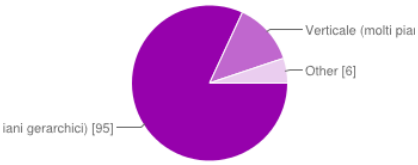
Sì, ma solo interni all'azienda	**8**	7%
Sì, ma solo esterni all'azienda	**20**	17%
Sì, entrambe	**70**	60%
No	**16**	14%

Gestite in maniera diversa i "knowledge workers" (lavoratori con particolari capacità e conoscenze) rispetto al resto delle risorse umane aziendali?



Sì	**42**	36%
No	**67**	58%
Other	**7**	6%

Come rappresentereste la vostra struttura gerarchica?

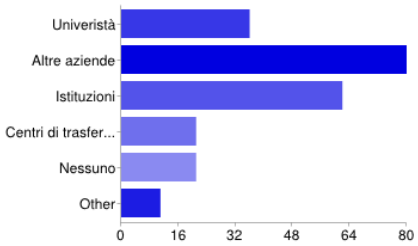


Orizzontale (pochi piani gerarchici)	**95**	82%
Verticale (molti piani gerarchici)	**15**	13%
Other	**6**	5%

Identificare la conoscenza tacita

Nella seguente sezione risponderete a delle domande relative alla vostra gestione nell'identificare la conoscenza tacita.

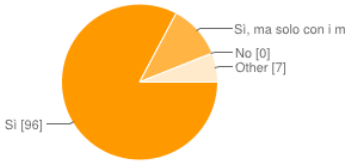
Interagite con attori esterni?



Univeristà	**36**	31%
Altre aziende	**80**	70%
Istituzioni	**62**	54%
Centri di trasferimento della tecnologia e della conoscenza	**21**	18%
Nessuno	**21**	18%
Other	**11**	10%

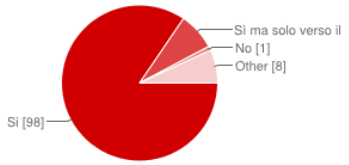
Gli utenti possono selezionare più caselle di controllo, pertanto le percentuali possono dare una somma maggiore del 100%.

I vostri collaboratori dimostrano fiducia verso i propri colleghi?



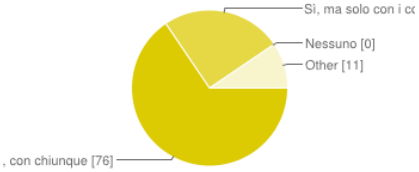
Sì	**96**	83%
Sì, ma solo con i membri del proprio team	**13**	11%
No	**0**	0%
Other	**7**	6%

I vostri collaboratori dimostrano fiducia verso i diversi piani gerarchici?



Sì	**98**	84%
Sì ma solo verso il livello più vicino a loro	**9**	8%
No	**1**	1%
Other	**8**	7%

I vostri collaboratori si sentono liberi di esprimere la propria opinione?



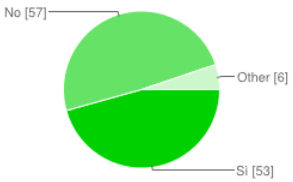
Sì, con chiunque	**76**	66%
Sì, ma solo con i colleghi stretti	**29**	25%
Nessuno	**0**	0%
Other	**11**	9%

Collezionare/allenare la conoscenza tacita

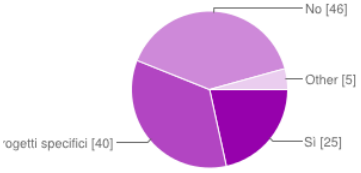
Nella seguente sezione risponderete a delle domande relative alla collezione e all'allenamento della conoscenza tacita.

Disponete di attività che permettano ai collaboratori di esprimere la propria conoscenza tacita?

Sì	**53**	46%
No	**57**	49%
Other	**6**	5%

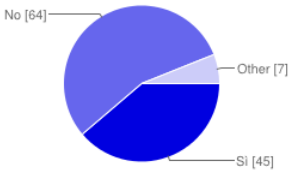


Disponete di team cross-dipartimentali?



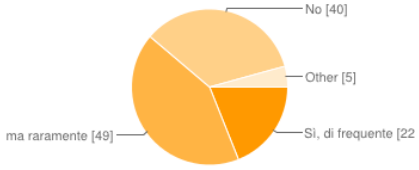
Sì	**25**	22%
Sì, ma solo ad hoc per progetti specifici	**40**	34%
No	**46**	40%
Other	**5**	4%

Disponete di meeting cross-dipartimentali?



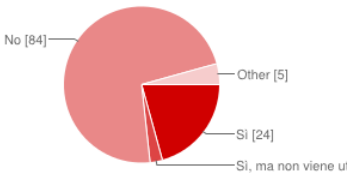
Sì	**45**	39%
No	**64**	55%
Other	**7**	6%

Nella vostra azienda vengono organizzate delle attività fuori dall'ambito lavorativo?



Sì, di frequente	**22**	19%
Sì, ma raramente	**49**	42%
No	**40**	34%
Other	**5**	4%

Avete un sistema ICT (information, comunication & technology), informatico, che vi aiuta a raggruppare, gestire, per quanto possibile la conoscenza tacita presente nell'azienda?

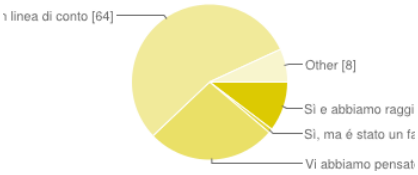


Sì	**24**	21%
Sì, ma non viene utilizzato	**3**	3%
No	**84**	72%
Other	**5**	4%

Rivedere/analizzare la conoscenza tacita

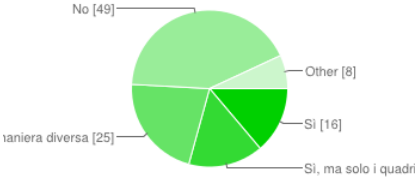
Nella seguente sezione risponderete a delle domande relative alla revisione, all'analisi e alla valutazione della conoscenza tacita.

Avete già sviluppato un progetto specifico sulla gestione della conoscenza?



Si e abbiamo raggiunto l'obiettivo	**12**	10%
Si, ma é stato un fallimento	**1**	1%
Vi abbiamo pensato ma non l'abbiamo mai messo in pratica	**31**	27%
No, non é mai entrato in linea di conto	**64**	55%
Other	**8**	7%

Disponete di un concetto di AAR?

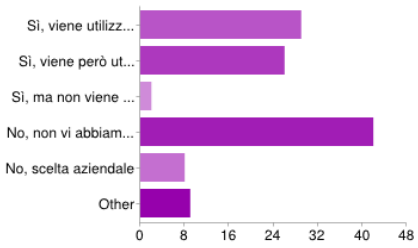


Si	**16**	14%
Si, ma solo i quadri ne prendono parte	**18**	16%
Disponiamo di un sistema simile ma strutturato in maniera diversa	**25**	22%
No	**49**	42%
Other	**8**	7%

Condividere la conoscenza tacita

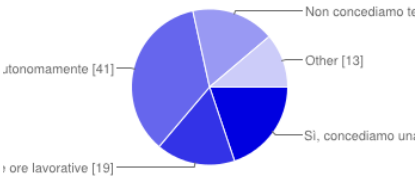
Nella seguente sezione risponderete a delle domande relative alla condivisione della conoscenza tacita.

La vostra azienda dispone di un'area nella quale il personale ha la possibilità di interagire in maniera informale e scambiare esperienze e conoscenza?



Si, viene utilizzata molto	**29**	25%
Si, viene però utilizzata poco	**26**	22%
Si, ma non viene utilizzata	**2**	2%
No, non vi abbiamo mai pensato	**42**	36%
No, scelta aziendale	**8**	7%
Other	**9**	8%

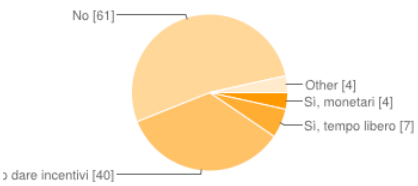
I vostri dipendenti dispongono di tempo per condividere esperienze e conoscenze?



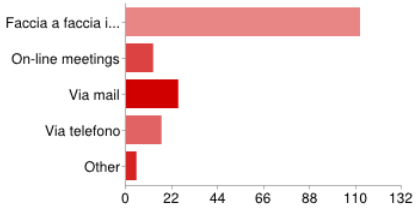
Si, concediamo una % del tempo lavorativo per tali attività	**23**
Non concediamo tempo lavorativo ma organizziamo momenti comuni fuori dalle ore lavorative	**19**
Non concediamo tempo lavorativo ma i nostri collaboratoti si organizzano autonomamente	**41**
Non concediamo tempo lavorativo e i nostri dipendenti non sembrano necessitare di tali attività	**20**
Other	**13**

w

Si, monetari	**4**	3%
Si, tempo libero	**7**	6%
No, non é necessario dare incentivi	**40**	34%
No	**61**	53%
Other	**4**	3%



Che tipo di interazioni preferite?



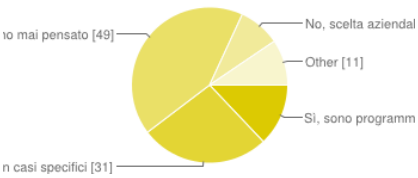
Faccia a faccia informale	**112**	98%
On-line meetings	**13**	11%
Via mail	**25**	22%
Via telefono	**17**	15%
Other	**5**	4%

Gli utenti possono selezionare più caselle di controllo, pertanto le percentuali possono dare una somma maggiore del 100%.

Avere accesso a conoscenza tacita

Nella seguente sezione risponderete a delle domande sulla capacità di accedere alla conoscenza tacita

Disponete di progetti/momenti/attività che mirano al trasferimento di conoscenza tra dipendenti con esperienza e giovani lavoratori?

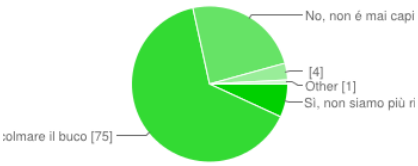


Sì, sono programmi che utilizziamo di frequente	**15**	13%
Sì, ma vengono utilizzati sono in casi specifici	**31**	27%
No, non vi abbiamo mai pensato	**49**	42%
No, scelta aziendale	**10**	9%
Other	**11**	9%

Utilizzare la conoscenza tacita

Nella seguente sezione risponderete a delle domande sulla capacità di utilizzare la propri sconoscenza tacita

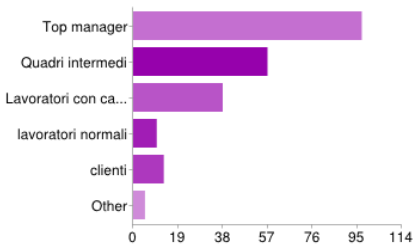
Vi siete mai resi conto di aver perso della conoscenza, p.es alla partenza di un collaboratore?



Sì, non siamo più riusciti a colmare la mancanza	**8**	7%
Sì, ma siamo riusciti a colmare il buco	**75**	65%
No, non é mai capitato	**28**	24%
	4	3%
Other	**1**	1%

Chi interagisce nell'elaborazione della strategia aziendale?

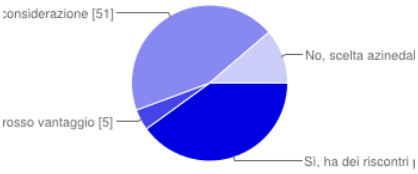
Top manager	**97**	85%
Quadri intermedi	**57**	50%
Lavoratori con capacità e conoscenze specifiche	**38**	33%
lavoratori normali	**10**	9%



clienti	**13**	11%
Other	**5**	4%

Gli utenti possono selezionare più caselle di controllo, pertanto le percentuali possono dare una somma maggiore del 100%.

Avete già provato ad applicare un progetto di job rotation



Sì, ha dei riscontri positivi	**46**	40%
Sì, ma non abbiamo riscontrato un grosso vantaggio	**5**	4%
No, non é mai stato preso in considerazione	**51**	44%
No, scelta azinedale	**13**	11%

Fine del questionario

Grazie mille per le vostre risposte e per l'aiuto dato. Cordialmente Federico Chiesa

Numero di risposte giornaliere