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Knowledge creation and sharing in an organization: An empirical analysis of the New Product Development process

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Abstract

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This thesis aims at understanding knowledge creation and sharing as a contemporary phenomenon in a specific organization of the Translation and Localization industry in Finland, with a key emphasis on the New Product Development (NPD) process. The thesis aims at pinpointing the areas where change is needed, and provide strategic solutions to support such change. The area of study focuses on the Translation and Localization business unit of the target organization, since this organization provides other services in addition to the translation and localization ones.

The thesis presents an overview of the concept of knowledge and its dichotomies from the epistemological and ontological point of view. The knowledge creation (KC) process and the NPD process are described and a conceptual framework is formulated explaining knowledge creation and sharing in the NPD process. The conceptual framework introduces knowledge creation in the NPD process as occurring in a shared context – Ba, via a modified SECI process which takes into account the embodied tacit and not-yet-embodied tacit knowledge, using knowledge assets (KA) that reflect the organizational culture.

The thesis pinpoints that the original SECI process cannot be applied successfully in the NPD process without deconstructing the concept of tacit knowledge and analyzing its constituents, the not-yet embodied tacit knowledge and embodied-tacit, which are key ingredients to the development of new products and to the organizational innovation process itself. It also shows that the knowledge creation and sharing process in the business unit of the target organization bears the features of knowledge creation and sharing given in the conceptual framework and also pinpoints several knowledge-related issues in the case organization.

The empirical data gathered and analyzed from the interviews, the survey and personal fieldwork observations show the need for a clearly defined knowledge creation strategy named Knowledge Translation for the target organization within the T&L business unit, which needs to be implemented according to a specific implementation plan. By targeting the knowledge-related issues of the T&L business unit, this strategy targets also the NPD process which is embedded in the T&L business unit. Such strategy implementation choice relies on the practical aspects of organizational management, with its constant demand for solid real-time solutions within a time frame limit needed to define resources and visualize results.

Key words
knowledge creation, knowledge sharing, New Product Development process, knowledge translation

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1 Introduction

Knowledge creation and sharing are some of the key phases that drive innovation in the organizational development and serve as catalysts to the knowledge management process of various organizations. They amplify the knowledge pool embedded in the individual, team and organizational level and provide the necessary medium to sustain continuous learning throughout various processes including the product development. Many organizations have already acknowledged the positive consequences of viewing themselves as knowledge creating and sharing platforms. To finalize such awareness, they have increased the presence of knowledge-exploiting tools, in an attempt to crystallize the innovation process and promote the role of individuals as knowledge bearing agents.

Knowledge management is a relatively new subject in the Translation and Localization industry, even though the concept is often recalled and discussed within the organizational processes of the industry without being defined separately. Over the past decades, this industry has progressed from providing simple one-way solutions, to localizing key technological innovations and helping companies in their internationalization quest by offering multiple ways of excelling in global communication. The lack of empirical analysis in this industry has limited the understanding of knowledge creation and sharing, therefore the focus of this study is to provide insights on the intra-organizational level.

The case company at the center of this study is an active player of the Translation and Localization industry in Finland. Prior to this study, the target organization had not defined the knowledge-related processes separately and was interested in a research of this type where the emphasis would be placed in defining the knowledge creation process and identifying the potential knowledge-related problems. The size of the organization and the continuous change of its internal activities also accelerated the need for organizational knowledge flow analysis in addition to its already known processes.

The objective of this study is to research the creation and sharing of knowledge as a contemporary phenomenon in the chosen organization within its real-life context, with the key emphasis on the New Product Development (NPD) process. The area of study focuses on the Translation and Localization business unit of the target organization, since this organization provides other services as well.

The case study aims at understanding knowledge distribution within the production processes of the target organization. It relies on a proposed conceptual framework derived from literature overview and empirical evidence gathered from interviews, organization documentation, survey results and personal observations to provide the necessary answers to the research questions. The study aims at pinpointing the areas where change is needed, and provide strategic solutions to support such change. The research questions are:
Primary question:

- How is knowledge created and shared in the New Product Development process in the target organization?

Secondary questions:

- How is knowledge created and shared in the target organization in general and in its Translation and Localization business unit in particular?
- What are the issues of knowledge creation and sharing in the target organization?

The study presents the theoretical background as the research foundation layer describing various approaches to knowledge as a concept and its related processes, culminating in the presentation of a knowledge creation conceptual framework, which is than tested in the empirical part of the study. Once the model is applied to the case organization, conclusions are drawn based on a combination of both qualitative and quantitative research.

2 Theoretical framework

Every research is based on a conceptual framework which is created as a result of the combination of several literature overviews and personal opinions. The research in question is based on a revised theoretical framework which takes into account several issues including:

- Familiarization of "knowledge" as a concept by company-based parties
- Dimensions of knowledge to define the reason behind the concept dichotomies
- The knowledge creation process via combining two main knowledge creation theories
- The New Product Development (NPD) process to present the general phases of product development
- Knowledge creation and sharing in the NPD process to present my personal conceptual framework on which empirical analysis is based

2.1 The concept of knowledge

The question of defining knowledge has puzzled Western philosophers for centuries. Throughout the years, philosophers have continuously approached the concept of knowledge from a dual point of view, the idealistic and the empiricist (Jashapara 2004, 34). The first philosopher to propose an explanation on the nature of knowledge was Plato, who defined knowledge as a perception and a true judgment. John Locke, an empiricist, developed further Plato's concept of knowledge by defining the latter as a perception of relationships between ideas. Immanuel Kant saw knowledge as bounded by possible experience, while Georg Hegel defined knowledge as a key option towards reaching the freedom of mind. (Jashapara 2004, 37)

American pragmatists Pierce, James and Dewey linked knowledge with concepts such as belief, meaning, action and inquiry. The phenomenology representatives such as Martin Heidegger and Jean-Paul Sartre included consciousness as an important medium where knowledge is created and developed, but it was the contemporary philosophers such as Gilbert Ryle, Michael Polanyi and John Macmurray who created the most dominant concepts within the current knowledge management literature by understanding knowledge in terms of its dual existence. (Jashapara 2004, 40)

Knowledge is a difficult concept to understand due to its subjectivity. One cannot understand the concept of knowledge without grasping its constituents. Furthermore, as Jashapara (2004, 48) puts it, knowledge can have a nebulous connotation and can become confused with such terms as data and information, especially when the terms are used interchangeably in organizations. Such confusion has been noticeable in the paradigm of the organizational conceptualization, which defines the latter as an information processing and problem-solving system, neglecting the information and knowledge creation within the organizational environment (Nonaka & Teece 2001, 14).

Jashapara (2004, 48) sees data as discrete objective facts about events that may take the form of structured records of transactions in organizations. In contrast, information is seen as a 'message' or flow of messages that informs the data and makes some difference in outlook or insight to the receiver. Data, information and knowledge are interconnected with wisdom in the so-called knowledge pyramid as shown in figure 1.

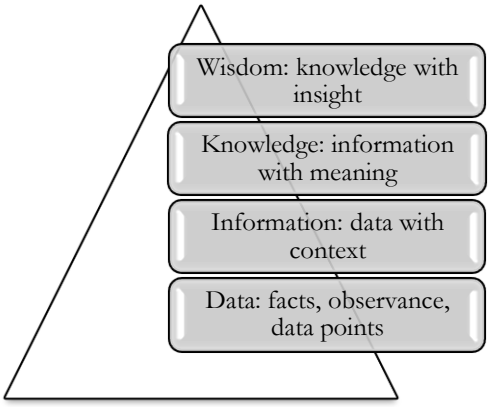

Figure 1. The knowledge pyramid (adapted from Hey 2004, 3)

Undoubtedly, there is a certain degree of misunderstanding involved with the above mentioned terms in the intra-organizational level, an aspect which is present in the organization case study as well. According to Schütt (2003, 7), knowledge is not so much a thing or a higher (quality) level of information, but more a kind of capability to put data into context. This higher level of data is called information and it represents the basis for most decisions or judgments.

One definition of knowledge is its categorizing as a difference between know-how and information, based on a similar distinction between declarative and procedural knowledge as used in artificial intelligence. The know-how or 'knowing how' refers to intelligence, while information refers to 'knowing what' and it is associated with knowledge possession (Jashapara 2004, 48). Intelligence arises during activity and it is associated with the ability of an individual to perform tasks, while information is a metaphor that can be delivered or shared once knowledge is possessed, as shown in figure 2.

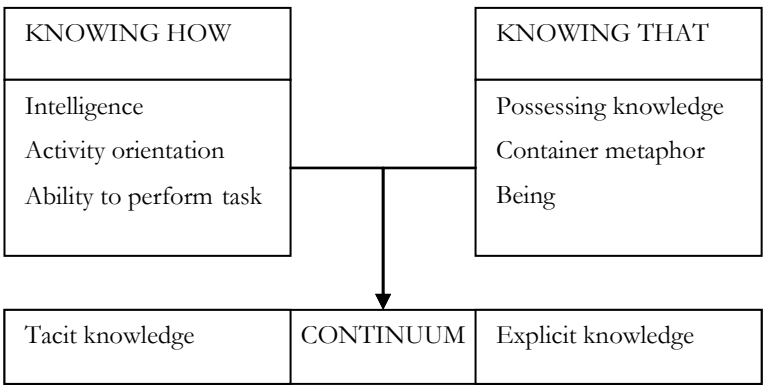

Figure 2. Philosophy of Gilbert Ryle and Michael Polanyi (Jashapara 2004, 41)

The dichotomy presented by Ryle and Polanyi is elaborated further by Nonaka and Teece (2001, 14) who recapture Plato's definition of knowledge and redefines the concept as 'justified true belief'. Nonaka (1991, 16) focuses on the changing 'justified' aspect, rather than on the absolute, static, non-human view of knowledge. According to Nonaka and Teece (2001, 15), such view is necessary in order to explain the dynamic, context-specific and humanistic nature of knowledge.

2.2 Knowledge dimensions

The duality of knowledge is noticeable in the framework classification into two dimensions, the epistemological dimension and the ontological dimension. Epistemology is the study of the processes by which beliefs and knowledge are acquired and justified. According to Nonaka and Teece (2001, 15) in the epistemological dimension, there are two types of knowledge: explicit knowledge and tacit knowledge.

Explicit or codified knowledge refers to knowledge that is transmittable in formal, systemic language and it is shared in the forms of data, scientific formulas, specifications, and manuals. Since it relates to the reality that it denotes from outside, it can be processed, transmitted and stored relatively easily (Nonaka & Teece 2001, 15). As Von Krogh, Nonaka and Nishiguchi (2000, 39) state, in explicit knowledge, the knower does not produce the thing the knowledge signifies; he produces a statement about the thing.

Tacit knowledge usually denotes knowledge that is embedded and embodied in everyday practices (Von Krogh et al. 2000, 37). Tacit knowledge is highly personal and hard to formalize. Subjective insights, intuitions and hunches fall into this type of knowledge which is deeply rooted in action, procedures, routines, commitment, ideals, values and emotions of individuals. It is difficult to communicate tacit knowledge to others, as it is an analogue process that requires a kind of 'simultaneous processing' (Nonaka & Teece 2001, 15). Tacit knowledge is therefore ephemeral and transitory and cannot be resolved into information or itemized in the manner characteristic of information (Hey 2004, 10).

According to Von Krogh et al. (2000, 40) there are two dimensions of tacit knowledge; the first is the technical dimension which includes the informal and difficult skills to pinpoint, often referred to as know-how and the second is the cognitive dimension which consists of beliefs, perceptions, ideals, values, emotions and mental models whose existence is taken for

granted since they exist inside us. Tacit knowledge is divided into two types, tacit-embodied and tacit not-yet-embodied knowledge. Embodied tacit knowledge captures knowledge about things we do; it is based on action experience and it requires reflection on action. Not-yet-embodied knowledge relates to reality from both within and outside (Von Krogh et al. 2000, 40).

The activities of creating and producing a product are examples of tacit knowledge; while the knowledge that enables the individual or organization to invent a particular type of product in the first place, is an example of not-yet-embodied tacit knowledge. This type of tacit knowledge is not yet embodied in the day-to-day practices of product development. The reality where not-yet-embodied knowledge takes place is described by Nishida as a *basho*, a place that gives rise to the process of enacting tacit knowledge in the first place.

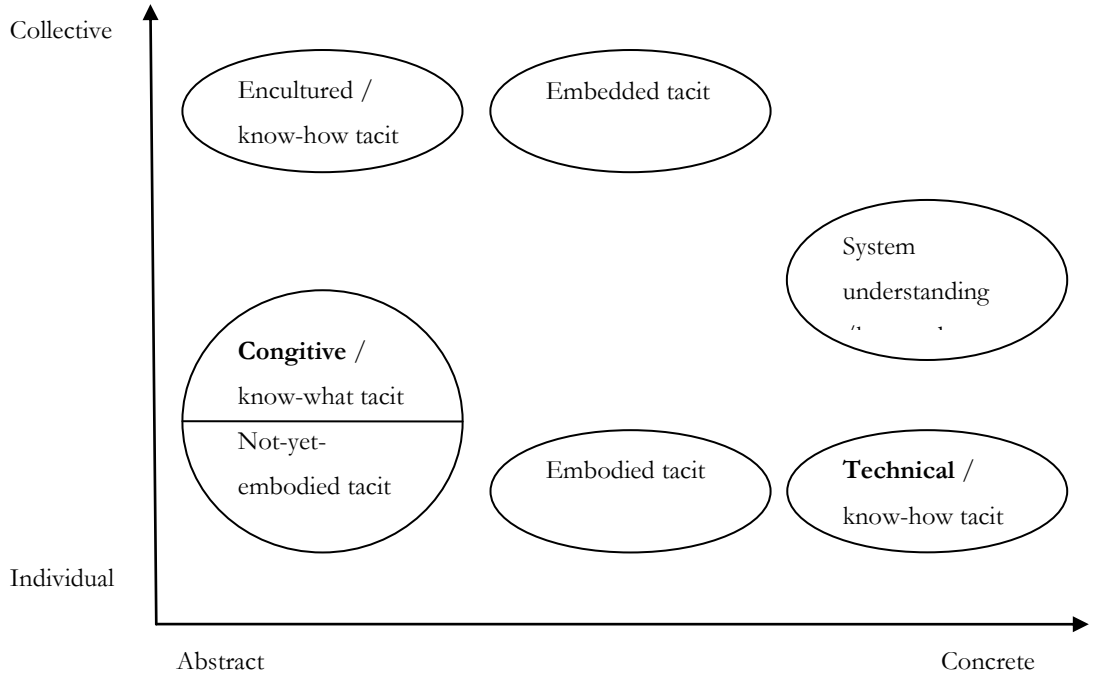

Figure 3. Framework of tacit knowledge (Haron and Alias 2005, 16)

The ontological dimension of knowledge is important to define the level of social interaction between knowledge bearing agents such as the individual and the collective including teams, social groups and organizations. Such dimension is based on the concept of ontology defined as an explicit specification of a conceptualization. A conceptualization is an abstract, simplified view of the world that we wish to represent for some purpose (Gruber 1993, 2). Nonaka argues that at the ontological dimension, knowledge is created by individuals and that such

knowledge is enhanced within an organization by the hierarchical relations between them (Nonaka & Teece 2001, 17).

However, knowledge can also be created by groups and organizations themselves once knowledge by individuals is shared, combined and transformed. From the social and organizational perspective (ontological dimension) there are several types of tacit knowledge as shown in figure 3:

- Encultured/know-how tacit knowledge (culture, shared understanding, relationship, corporate mind set);
- Embedded/architectural tacit knowledge (organizing routines, shared norms, taken-for-granted routines and interactions);
- System understanding/know-why tacit knowledge (know-why, knowledge on principles of motion, universe law, systems, schema, reference methodology).

As Haron and Alias (2005, 5) explain, regardless of the presented concepts in a defined, separated form, it should be noted that, there is no clear separation between tacit knowledge and explicit knowledge, and there are no clear boundaries between the various levels and dimensions of tacit knowledge itself.

2.3 The process of Knowledge Creation (KC)

Knowledge has become the driving force in current economy, and it is considered the essential source of competitive advantage Efficient management of knowledge, its measurement, reporting, sharing, and protecting have become everyday practices for many businesses (Jakubik, 2007, 6). Broadly speaking, knowledge management involves four key steps of creating/generating knowledge, representing/storing knowledge, accessing/using/re-using knowledge, and disseminating/transferring knowledge. Knowledge creation is the first stage in any knowledge management initiative (Schwartz, 2006, 326-327). Currently, there are different theories explaining the knowledge creation process from two main viewpoints; from a people perspective and a technology perspective which when combined form the Knowledge Management diamond proposed by Schwartz (2006, 327) and represented in figure 4.

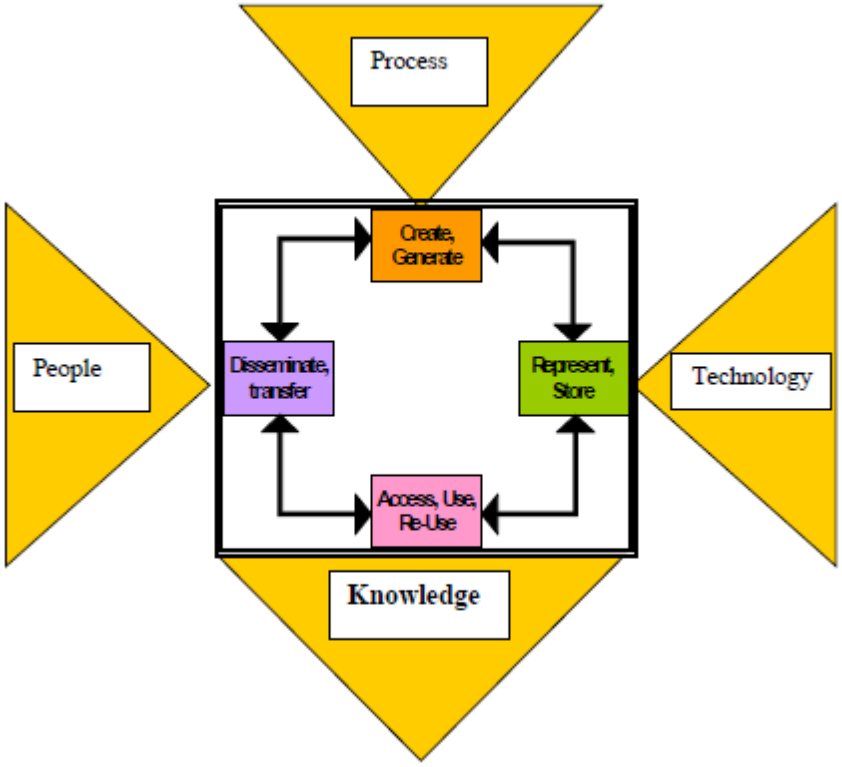

Figure 4. The Knowledge Management (KM) diamond (Schwartz 2006, 327)

My approach in this case study follows a people's perspective of Knowledge Management, the core meaning of which focuses on the fact that new knowledge is created by the individual. The reason for such choice derives from my humanistic background and my personal belief that knowledge creation is first and foremost a psychologically and socially driven phenomenon with dynamic characteristics. This reasoning is further supported by the structure of this case study enhanced by both qualitative and quantitative data, emphasizing the human factor and its views on knowledge-related issues in the target organization.

From a people perspective, knowledge creation is a continuous, not-yet-embodied or self-transcending process by means of which one transcends the boundary of the old self into a new self by acquiring a new context, a new view of the world and new knowledge (Nonaka & Teece 2001, 16). This knowledge is created via the interactions between individuals (micro) themselves and between individuals and their environment (macro). To understand how organizations create knowledge dynamically, Nonaka proposes a model of knowledge creation consisting of three elements:

- The SECI process – the process of knowledge creation via conversion from tacit to explicit knowledge;
- Ba – the shared context for knowledge creation;
- Knowledge assets – the inputs, outputs, and moderators of the knowledge creation process.

An organization creates knowledge via the conversion between tacit and explicit knowledge, a dichotomy observed in the earlier chapter, during which both types of knowledge expand in quality and quantity.

The SECI process

Socialization is the process of converting tacit knowledge into new tacit knowledge through shared experiences. Since tacit knowledge is personal, difficult to formalize and time-space specific, it can be acquired through shared experiences. Typical examples include apprenticeship, and informal social meetings. In this process, people empathize with each-other, which in turn lower the barriers and promote communication between individuals.

Externalization is the process of converting tacit knowledge into explicit knowledge. This conversion enables the codified knowledge to be shared by others and allows new knowledge to be created. Typical examples include concept creation and quality control in the product development. In this process, the individual commits to the group and his ideas fuse with the group's mental world.

Combination is the process of converting explicit knowledge into explicit knowledge. This conversion according to Nonaka and Teece (2001, 21) enables the formation of more complex and systematic explicit knowledge. Typical examples include the breaking down of corporate vision and product concepts into operational business units. In this process, the new knowledge generated transcends the group in analogue or digital signals.

Internalization is the process of converting explicit knowledge into tacit knowledge. This conversion enables the sharing of created knowledge by individuals of the organization and its conversion into tacit knowledge. Internalization is closely related to 'learning-by-doing' and typical examples include training programs, reading work-related manuals and documentations that enhance the individual tacit knowledge base. In this process, the individuals access the collective group or organizational knowledge which generates new tacit knowledge. (Nonaka & Teece 2001, 21)

Knowledge creation is a dynamic process of interactions between explicit and various types of tacit knowledge. Such interactions form a spiral since knowledge is amplified during each con-

version as it moves through the ontological levels, from the individual to the organization and beyond as seen in figure 5.

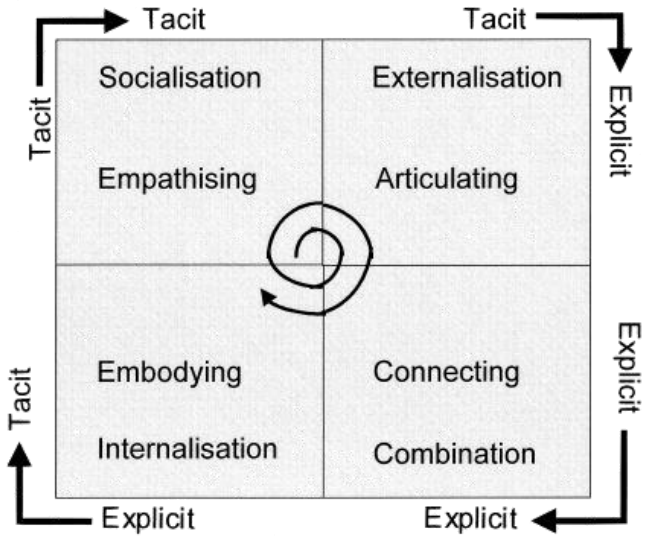

Figure 5. The SECI process (Nonaka and Teece 2001, 20)

Knowledge created via the SECI process can trigger new spirals of knowledge creation since its application is not confined to the individual alone. Such spiral process takes place both in an intra- and inter-organizational level and this dynamic interaction enables the organization to grasp the knowledge present by its partners, customers, suppliers and distributors. The SECI process does not take into account the distinction between various types of tacit knowledge. According to von Krogh et al. (2000, 50), the original concept of the knowledge spiral should include such types as not-yet-embodied tacit and embodied-tacit knowledge. The inclusion of such dichotomy produces a double spiral of knowledge which splits the original SECI process into two core components: SECI I and SECI II.

As seen above, **SECI I** process revolves around shared reflection and the conversion of tacit-embodied knowledge, while SECI II revolves around the formation of shared will and the conversion of not-yet-embodied or self-transcending knowledge. SECI I process is based on the SECI process described above, the spiral of knowledge-creation made possible by socialization, externalization, combination and internalization. This process is the basis of shared reflection, including all practices of sharing experiences and surfacing their underlying themes, puzzles and questions. It is made by sharing reflections on common experiences between the individuals of an organization. (Von Krogh, et al. 2000, 50)

SECI II process is based on four types of knowledge conversion: sensing, externalizing, consenting and initiating. This process is the basis of shared formation of will, which according to

Von Krogh et al. (2000, 50) happens in all conversations in which participants come together to articulate a sense of shared aspiration and will. This process revolves around what the individuals really care about together as a group such as their underlying aspirations and experiences, continues with reflecting on common individual themes, proceeds with surfacing a sense on the emerging future that inspire the group, and ends with agreed upon leverage points and commitment on possible actions. Shared formation of will thus starts with subjective reality and ends with objective realities. The SECI II is especially visible in teams as it will be observed in the empirical analysis of the organization's case.

Sensing is the process of converting not-yet-embodied tacit knowledge into new not-yet-embodied tacit knowledge. This is made possible by sensing the field of emergent possibilities, new actions, and possibilities arising from day-to-day practices which would enable the creation of a new product or service.

Externalizing is the process of converting not-yet-embodied tacit knowledge into explicit knowledge. This is made possible by externalizing the field of emergent reality, the one that induced the creation of not-yet-embodied tacit knowledge in the first place.

Consenting is the process of converting explicit knowledge into explicit knowledge. This is made possible by consenting around an emergent common ground, practice or reality.

Initiating is the process of converting explicit knowledge into not-yet-embodied knowledge. This is made possible by initiating action, taking the lead on the necessary steps needed to capture the already present explicit knowledge.

SECI I and SECI II combine with what Von Krogh et al. (2000, 50) identify as the *shared praxis*, referred to as what people do together evolving around the so-called 'communities of practice', a place where the members learn embedded-knowledge rooted deep in the community. Such communities should share experience, and perceive distributing work as a shared body of action. The shared praxis is the key to social value creation and it is one of the constituents of the double-spiral of knowledge creation as shown in the below figure 6.

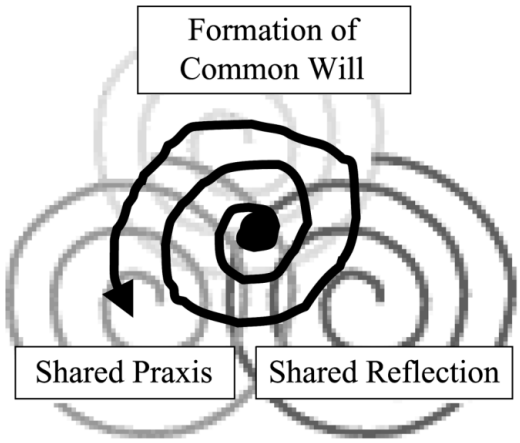

Figure 6. The double spiral of self-knowledge creation (Von Krogh et al. 2000)

Ba – the knowledge creation shared context

Knowledge needs a medium to develop in both time and space. The Japanese philosopher Kitaro Nishida called this context, *Ba*, defined as a shared context in which knowledge is shared, created and utilized (Nonaka & Teece 2001, 22). In this medium, information is interpreted in a both physical (face-to-face) and virtual (e-mail, mental) space to become knowledge. *Ba* is categorized into four different types of knowledge-creating mediums defined by the type of interaction and the space where it takes place. The type of interaction can be individual or collective and the space where such interaction takes place can be either physical or virtual as seen in figure 7. According to Nonaka and Teece (2001, 24), the four types of *Ba* are:

- **Originating Ba** – this type of context is individual and it takes place in a physical space where individuals share face-to-face experiences, feelings, emotions, and mental models. It is a context used in the socialization process of knowledge creation and forms the basis of tacit knowledge conversion between individuals;
- **Dialoguing Ba** – this type of context is collective and it takes place in a physical space where individuals share face-to-face mental models and skills and convert them into common terms and articulate them as concepts. It is a context used in the externalization process of knowledge creation and forms the basis of tacit to explicit knowledge conversion between individuals;
- **Systemizing Ba** – this type of context is collective and takes place in a virtual space where individuals combine their existing knowledge using on-line networks, groupware, documentation, databanks, e-mailing lists and newsgroups. It is a context used in the combination process of knowledge creation and forms the basis of explicit knowledge combination between individuals;

- **Exercising Ba** – this type of context is individual and takes place in a virtual space where the individual embodies explicit knowledge that is present in form of written manuals, electronic documentations and programs. It is a context used in the internationalization process of knowledge creation and forms the basis of explicit to tacit knowledge conversion in an individual.

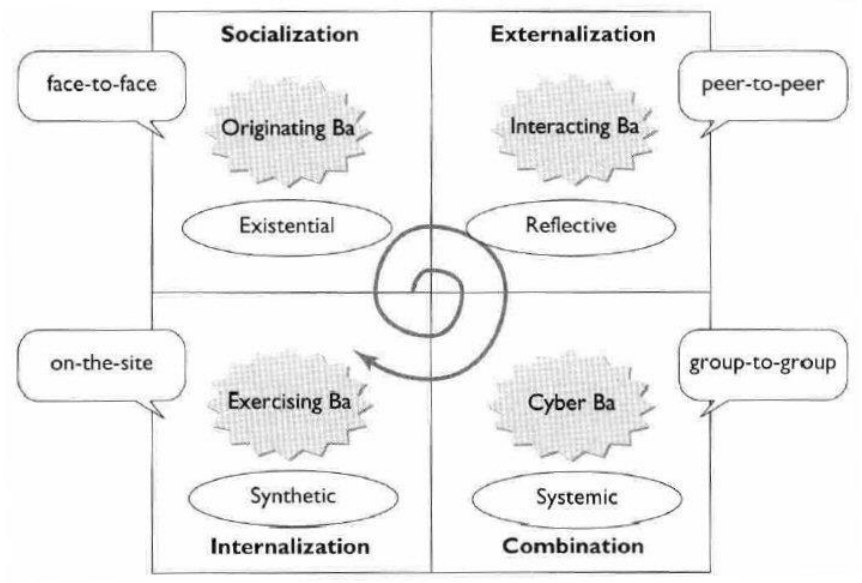

Figure 7. Ba, the shared space for interaction (Nonaka 2000, 16)

According to Nonaka and Teece (2001, 34), *Ba* can be built intentionally or created spontaneously. The intentional building occurs when the organization provides the individuals with the necessary physical space such as meeting rooms or virtual space such as computer networks and common goals, and creates teams within the organization who are presented with specific tasks and duties. Spontaneously created *Ba* are more difficult to pinpoint since they have the tendency to appear, change and disappear quickly and one of the most difficult tasks for an organization management is the assessment of situation where such *Ba* is formed.

However, building, finding and connecting *Ba*- mediums is not enough for an organization to manage the process of knowledge creation. The shared context needs to be energized by being supplied with the necessary conditions which Nonaka and Teece (2001, 34) identify as autonomy, creative chaos, redundancy, requisite variety, love, care, trust and commitment, also known as knowledge assets.

Knowledge assets

Knowledge assets are inputs, outputs and moderators of the knowledge-creating process, defined by Nonaka and Teece (2001, 29) as firm-specific resources, indispensable for creating organizational value. They grow and shift through the continuous process of knowledge conversion as well as moderating how *Ba* performs as a platform for both SECI I and II. There are four types of knowledge assets:

- **Experiential knowledge** assets consist of shared tacit knowledge, which is built through shared experience among the members of the organization, and its partners, customers and suppliers. They include skills and know-how accumulated by experience, emotional knowledge (love, care, trust, and security), physical knowledge (facial expressions, gestures), energetic knowledge (sense of existence, enthusiasm, and tension), and rhythmic knowledge (improvisation and entrainment);
- **Conceptual knowledge** assets consist of explicit knowledge articulated via images, symbols and language held by members of the organization and customers. They include brand equity, concepts and designs;
- **Systemic knowledge** assets consist of systemized and packaged explicit knowledge. They include technologies, product specifications, manuals, documented information about customers and suppliers, patents and licenses.
- **Routine knowledge** assets consist of routine tacit knowledge which is embedded in the actions and practices of the organization. They include know-how, organizational routines and organizational culture.

The SECI I and II, Ba and Knowledge assets are the key factors that drive the knowledge creation engine from the people's perspective. Their presence serves as a main platform for Knowledge Management process' development in the organizational level. The Knowledge Creation (KC) process serves as the backbone for the study of knowledge creation and sharing in the case organization. KC will be coupled with the NPD process discussed in next chapter to provide the insights to the research questions from the theoretical perspective.

2.4 The process of New Product Development (NPD)

The New Product Development (NPD) process is a term used to describe an integrated process of creating a new product and launching it into a specific market. The NPD is vital for companies relying on the innovation process to generate and commercialize new products and services. Gessinger (2009, 66) states that the NPD process is a central part of the innovation

process which includes also the fuzzy front and the commercialization as represented in figure 8. The front fuzzy end or so-called the fluid phase includes all the factors that lead to a new opportunity and idea generation, while the commercialization phase follows the product's introduction to the target market.

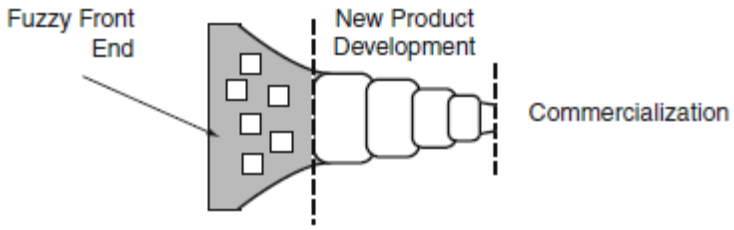

Figure 8. Three areas of innovation process (Gessinger 2009, 66)

New Product Development is the process of designing, building, operating and maintaining a product or service. During this process, pricing, marketing and customer support are added to the technology to create a complete product (Windley 2002, 4). Product development refers to the development of either a new product or the modification of an existing product. According to Kohlbacher (2008, 326), new product decisions have significant strategic implications that determine the future of a business and involve several functional areas within an organization. The NPD process consists of four generic stages: idea generation, concept development, technical development and product launch, as represented in figure 9.

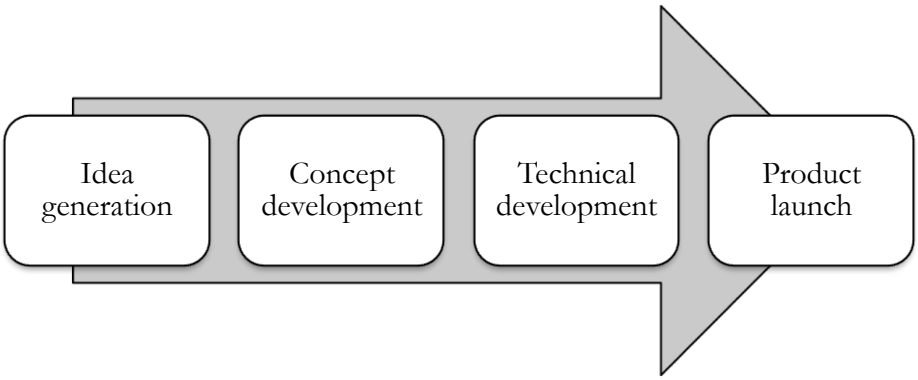

Figure 9. The New Product Development (NPD) process

Idea generation is a process in which creative thinking is used to produce large amount of ideas for new products. It is very important that all ideas no matter how derisory or extreme may sound, to be gathered and explored. As Nonaka (1998, 26) puts it, creating new knowledge is as much about ideals as it is about ideas. The idea generation process should be an ongoing one, have a specific purpose, involve the whole of the organization including partners, suppliers and customers, and use a variety of methods. New product ideas are generated by

using different sources such as organization employees, competitors, customers, distributors and suppliers. The idea generation is a gathering process where the individual should not criticize the ideas of others, but instead generate freely as many ideas as possible. The management of ideas is also very important at this stage due to the large number of ideas to be selected and analyzed.

Concept development is a process in which a set of customer needs and target product specifications are converted into a set of conceptual designs and potential technological solutions. It involves defining alternate product concepts, investigating feasibility and choosing the best option. According to Daim, Sener and Galluzzo (2009, 2), the concept development process consists of the following stages: problem definition, concept generation and concept evaluation/selection. During the problem definition stage, the customer needs and specifications are analyzed as a set of problems to solve, these problems are broken down and decomposed into simpler sub-problems and the latter are analyzed and documented. During the concept generation stage, solutions are found, organized, synthesized and filtered to each sub-problem, the generated ideas are further explored and the concept design models are finalized. During the concept evaluation/selection, the design models are analyzed, and the prototypes are tested. Manufacturability, supply chain capabilities and other aspects of product feasibility are also taken into account. Different alternatives are screened and narrowed to improve the concepts. The remaining and improved concept is then evaluated by the customer until chosen for productization (Daim et al. 2009, 3).

Technical development is a process in which technology is researched and developed for the chosen concept. For this stage, technology needs to be available and mature enough to be integrated into products. This includes testing the product to ensure operational readiness before the product's launch. During this phase, technology is integrated into the concepts and the product is finalized, the R & D sector being responsible for such operation, ensuring that the technology is available prior to its integration. Product performance is evaluated and validated through testing and qualification steps to ensure that the product meets its defined requirements. The technology development demonstrates business value, usage models, cost and performance analysis, as well as risk estimation and technology challenges.

Product launch is a process which coordinates the deployment of the new product (Windley 2002, 5). This is the last phase of the new product development process and requires three stages: planning, positioning and execution. The planning stage includes defining the sales

objectives, sales channels, the promotional functions and the resources to track and monitor the launching. The positioning stage enables the identification of the proper launch channels, the way the new product will be sold, as well as defining the key distributors, information about the product both within the organization and outside through website updates, sales presentations, etc. The execution stage explores at new ways of reaching the customer, as well as the pricing strategy. The case organization is a well-known innovation driver in the Translation and Localization industry of Northern Europe; hence its NPD process is well developed and suited to a variety of products which provide valid solutions to different customers. The empirical part will provide a detailed view of this process as well as identifying the knowledge-related actors involved in the process. It is important to note that the term "product" in this study case refers to both products and services; the decision to opt for the use of the former was deemed necessary as it stays clear of services that function along the NDP process itself.

2.5 Knowledge creation in the New Product Development (NPD) process

The New Product Development process is not only a sequential list of activities but also a dynamic and complex process closely linked to knowledge management (Bahemia & Squire 2007, 3). According to Sanchez (2001, 227), the ability of an organization to succeed in a competitive environment depends largely on its ability to provide product offers that are perceived as valuable and attractive by potential customers. Kolbacher (2008, 330), views product development as a particularly salient area for organizational learning inquiry since it is often a team-based pursuit, it requires a high degree of inter-functional coordination and it is frequently project-based.

New product development is a knowledge-based process where knowledge is created and transferred in an intra- and inter-organizational level. It is a process that requires the capability to obtain, transform and interpret large amounts of market, technical, financial and other internal and external information, in order to develop product ideas and evaluate their technical soundness, manufacturability and economic feasibility (Gupta & Sharma 2004, 154). Knowledge is created and used in the NPD process in order to generate further ideas and concepts. It is a vital asset of the NPD process because it provides the context for the NPD process successful evolution, as shown in figure 10.

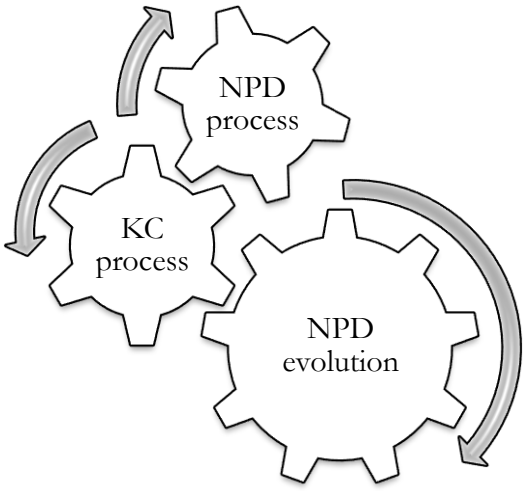

Figure 10. The role of Knowledge Creation (KC) in the NPD process

Knowledge creation in the NPD process occurs in a shared context – Ba via a modified SECI process which takes into account the embodied tacit and not-yet-embodied tacit knowledge, using knowledge assets (KA) that reflect the organizational culture. The Ba is made of all four types of shared contexts which ensure the creation of both tacit and explicit knowledge. The stages of the SECI process are embedded in each phase of the NPD process. Knowledge creation cannot be complete without the presence of the experiential, conceptual, systemic and routine knowledge, also referred to as knowledge assets. Figure 11 gives a representation of the conceptual framework of the knowledge creation which combines the SECI I and SECI II processes, the shared Ba and the knowledge assets KA with the NPD process.

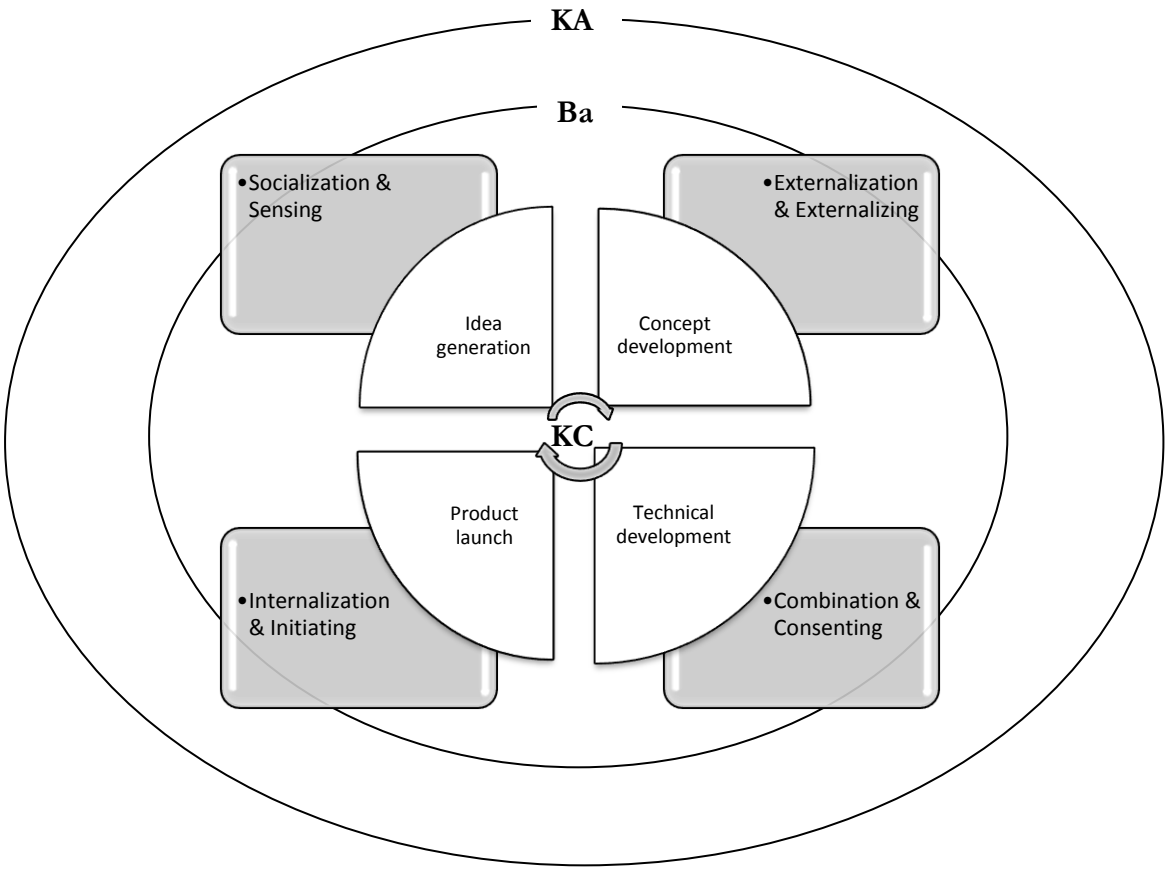

Figure 11. Conceptual framework of knowledge creation in the NPD process

New Product Development presented in the conceptual framework given in figure 11 involves the synthesizing of both explicit and tacit knowledge. Tacit knowledge, both embodied and not-yet-embodied is present in generating ideas, developing, disseminating and implementing concepts, defined as descriptions of the product in accordance with the attributes perceived by the target customers in product development. Explicit knowledge can be found in the form of collected data, and specifications about the product which are vital for the Technical development and the Product launch phases. The transformation of knowledge from tacit to explicit generates new knowledge which is used to power up the new product development stages into a new spiral of knowledge creation which generates innovative products.

The conceptual framework focuses on the fact that knowledge creation in the NPD process cannot be understood without the presence of the combined SECI I and II processes which are embedded in all the product development stages. The combined SECI process serves as a fundamental base to the NPD process since each SECI phase of knowledge conversion can apply to several phases of product development. In this view, figure 11 should be considered in its totality and not in the adjacency of the inner and outer level boxes.

2.6 Summary

The theoretical framework presented in figure 11, describes the concept of knowledge from different philosophers' point of view, focuses on the duality of knowledge dimensions and analyzes knowledge creation and the New Product Development process. Knowledge is a difficult concept to understand due to its subjectivity and one cannot understand the concept of knowledge without grasping its constituents which are viewed as dichotomies. This duality of knowledge is noticeable in the framework classification into two dimensions, the epistemological dimension and the ontological dimension. Epistemology is the study of the processes by which beliefs and knowledge are acquired and justified.

The epistemological dimension presents two types of knowledge: explicit knowledge and tacit knowledge. The ontological dimension of knowledge is important to define the level of social interaction between knowledge bearing agents such as the individual and the collective including teams, social groups and organizations. Such dimension is based on the concept of ontology defined as an explicit specification of a conceptualization.

An organization creates knowledge via the conversion between tacit and explicit knowledge, during which both types of knowledge expand in quality and quantity. This knowledge is created via the interactions between individuals (micro) themselves and between individuals and their environment (macro). New product development is the process of designing, building, operating and maintaining a product or service. It is a knowledge-based process where knowledge is created and transferred in an intra- and inter-organizational level.

Knowledge is created and used in the NPD process in order to generate further ideas and concepts. It is a vital asset of the NPD process because it provides the context for the NPD process successful evolution and innovation. Knowledge creation in the NPD process occurs in a shared context – ba via a modified SECI process which takes into account the embodied tacit and not-yet-embodied tacit knowledge, using knowledge assets that reflect the organizational culture. The following chapter marks the beginning of the empirical part by describing the research method used in this research, followed by an overview of the case organization and its related processes.

3 Case study

The conceptual framework presented in the previous chapter shapes the research strategy of this thesis and presents it in form of a case study. The reason for such choice resides on examination of the case organization's knowledge creation and sharing process over a period of eleven months, six of which are dedicated to the case study itself and 5 months are previous personal work experience in the organization itself.

3.1 Research strategy

Knowledge creation is a process the study of which needs to be approached from both the epistemological and the ontological dimensions. The events that form the NPD process are conditioned by knowledge-related factors and they are best analyzed from a descriptive point of view by combining both quantitative and qualitative research data.

3.1.1 Qualitative research

The qualitative research is deemed necessary to research knowledge creation and sharing in the NPD process from an in-depth point of view requiring the use of both primary and secondary data, in addition to personal fieldwork observations. According to Myers (2009, 36) the qualitative methodology can be split into four main stages:

- Philosophical assumptions – the research is based on an underlying assumption of what makes this research a valid one
- Research method – the research uses the gathered empirical facts to convince of the applicability or not of the theory presented in the conceptual framework
- Data collection technique – the collected information includes both primary data (interviews), secondary data (memos, meeting reports) and also personal fieldwork observations in the case study organization
- Data analysis approach – the purpose of this stage is to classify the gathered data and synthesize conclusions using a specific analysis approach.

Philosophical assumptions

The philosophical assumption of this research is based on an interpretive research, centered on face-to-face semi-structured interviews, using a set of pre-formulated questions as the pri-

mary application tool, as well as secondary organizational data and my own fieldwork observations. Interpretive researchers assume that access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings and instruments. They do not predefine dependent and independent variables, but focus instead on the complexity of human sense-making as the situation emerges; they attempt to understand phenomena through the meanings that people assign to them. (Meyers 2009, 38) The decision to opt for an interpretive research is influenced by the fact that content analysis cannot alone explain certain patterns of the knowledge-related process which are man driven, but needs to rely also on the social content and human factor where knowledge is largely formed and analyzed from an interpretive perspective. In this light, the very structure of the collected data cannot have a meaning without the theoretical assumptions given in the first part of this research and the human factor, thus creating the interdependency between theory and empirical research. The collected facts include not only documented data but also observations during my daily work in the organization, interactions with its employees and deductions based on their actions and performance.

Research strategy

Myers (2009, 53) distinguishes four types of research methods or strategies: action research, case studies, ethnography and grounded theory. My approach is a case study which according to Myers (2009, 70) is a qualitative research method that illustrates a principle or a particular point that the instructor wishes to make. The case study shows that the theory has a practical application and brings the subject matter to life. In a similar way, the case study in question aims to understand the knowledge-related processes in the case organization and to test a modified conceptual framework based on knowledge creation and sharing theory with intended solutions aimed at directly improving the situation in the case organization.

Data collection

The data collection technique is multilayered and includes semi-structured interviews and various organization documentations. The choice of semi-structured interviews for this research is based on the fact that they provide the advantages of both structured and unstructured interviews, the former being pre-made questions and the latter being open questions. Semi-structured interviews sit somewhere in between structured and unstructured interviews, involving the use of pre-formulated questions without adhering strictly to them (Myers, 2009, 124). The semi-structure type of the interviews in this case study is confirmed by the presence of additional questions asked to the interviewees in order to clarify the answers.

The interviews are individual-based and are conducted during a period of two weeks during which, each person is interviewed separately in the Translation & Localization business unit of the target organization. The interviews' duration is approximately 30 minutes each and they are transcribed in English since the majority of the interviews are conducted in Finnish. The objective of the interviews is to provide insights on the Product Development process of the organization from the knowledge perspective, as well as identifying knowledge creating sources. Special attention is given to the questions that aim at identifying potential problems within the knowledge flow in the NPD process, as well as the value-adding features of knowledge itself. The data collected includes the interviews' transcripts, materials from the organization itself and my own observations completed during my working experience in the organization which is implemented in form of personal annotations throughout the case study.

Data analysis

The preferred approach for the data analysis is the content analysis in which, the interview data transcripts are described and arranged according to specific themes. According to Myers (2009, 172), content analysis seeks to demonstrate the meaning of written or visual sources by systematically allocating their content to pre-determined, detailed categories, and then both quantifying and interpreting the outcomes. In a similar way in this research, a set of themes in a pre-determined way and its outcome explained in detail. Figure 12 gives a graphical representation of the qualitative research model in perspective.

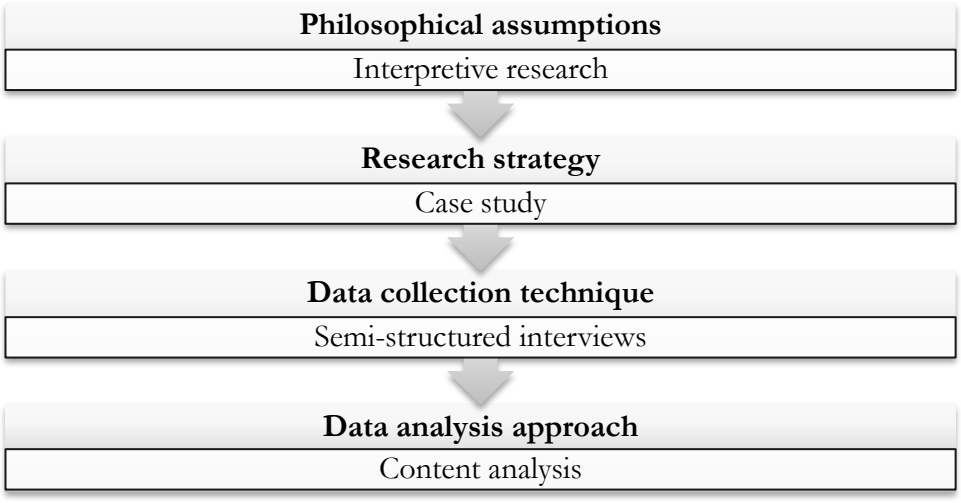

Figure 12. The qualitative research model perspective

3.1.2 Quantitative research

The decision to opt for a quantitative research is based on the fact that the qualitative data alone is deemed insufficient in evaluating the extent of knowledge presence and distribution in the overall business unit of case study organization where the NPD sector is located. The quantitative research ensures the inclusion of valuable data from a broader range of people from the organization who possess key organizational knowledge and make the case study more complete. The quantitative research is split into the following stages:

- Coding - An Excel sheet serves as the tool for entering the data collected by the survey. Each respondent is given a particular ID, and questions are divided into:
    - Single-response close-ended questions
    - Multiple-response close-ended questions
    - Open-ended questions
- Data Analysis – Once the collected data is entered in the Excel sheet, it is analyzed according to the following statistical methods:
    - Average calculation – the average response per question from all the respondents
    - Frequency distribution – the number of the respondents that answered each question. Such function is used for both single and multiple-response questions and calculated as percentage
- Results Presentation – the results are presented in various charts with comments.

Below, figure 13 gives a graphical representation of the quantitative research:

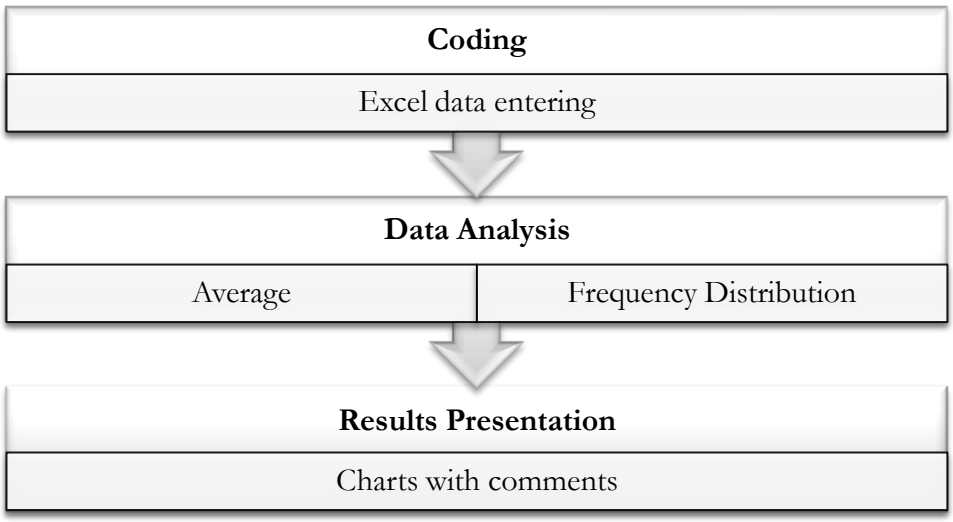

Figure 13. The quantitative research model perspective

3.1.3 Triangulation of research methods

Triangulation is the technique of combining qualitative and quantitative research methods in one study (Myers, 2009, 10). The idea in this research is to triangulate the qualitative data from the interviews with the quantitative data from the survey in order to present a clear view of the knowledge creation and sharing process for the target organization in question. The decision to choose a quantitative or qualitative method applied to technology evaluation depends on the business objectives of the applying organization. Quantitative methods are applied mostly for selecting or prioritizing research and development (R&D) projects or technologies and developing product-technology roadmaps, while qualitative methods are used for managing a strategic R&D portfolio. (Daim et al. 2009, 2)

In a similar way, my decision to opt for a triangulation of quantitative and qualitative research in this thesis ensures the answering to the research questions regarding the case organization with quantitative methods focused on the Knowledge Creation (KC) and sharing in the case organization's targeted business unit (BU) and the qualitative methods focused on the KC in the NPD process of this business unit.

This research plan is made of the following stages represented graphically in figure 14:

- Key questions – the thesis primary and secondary research questions of the thesis and objectives as given in the introduction part of this case study
- Research planning – the thesis planning phase includes the identification of the research type alternatives (active research or case study) and determining the choice criteria (case study) as referred to in chapter 3.1
- Analysis criteria – the case study criteria analysis as described above
- Qualitative & quantitative analysis as presented in subchapters 3.1.1 and 3.1.2
- Summary and conclusion – the interpretation of the analyzed data as presented in chapter 4
- Implementing the results – Presenting a strategy which provides an answer to the key questions as presented in chapter 4.2.1.

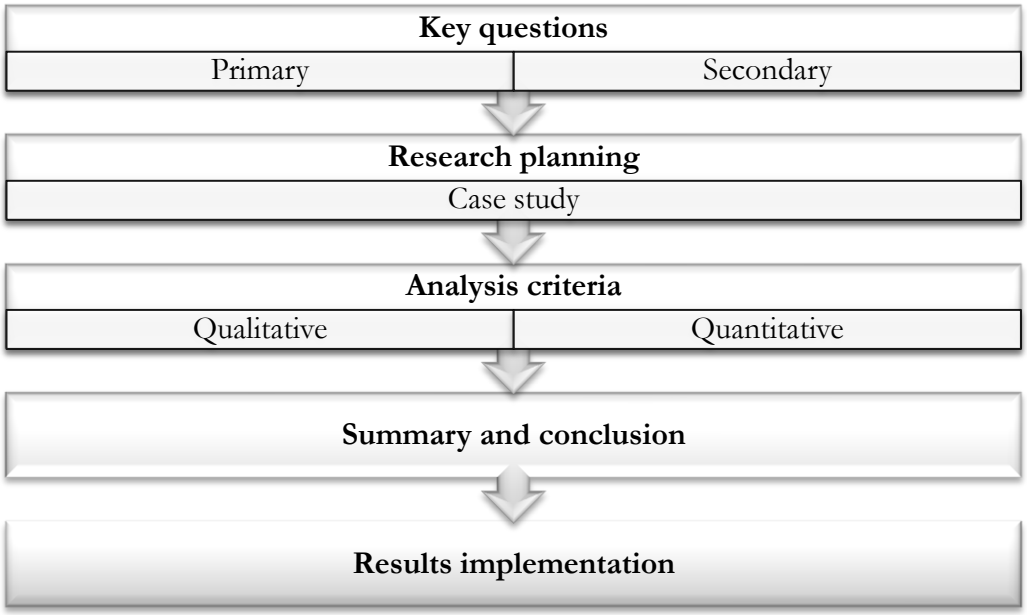

Figure 14. The research process of the thesis

3.2 Company presentation – The target organization

The following data has been collected for a period of five months from January 2010 to May 2010. The target organization studied in this research provides language services for different corporations. Its services include language training, communication skills training, management and leadership training, translation, editing and localization services, terminology management solutions, documentation and consultation services.

Figure 15 gives a representation of the services currently offered by the target organization with the main emphasis of the research in the Translation & Localization business unit and specifically in its NPD sector.

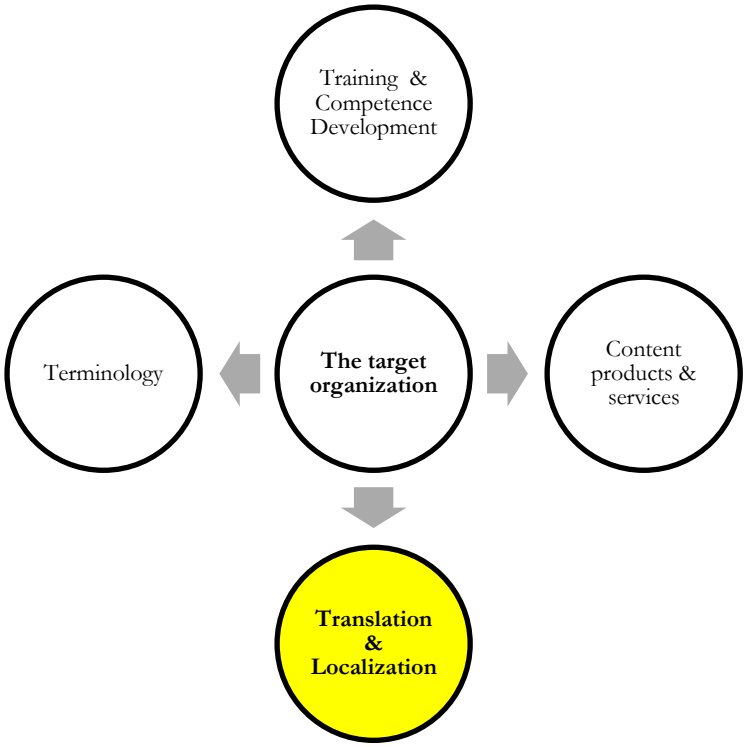

Figure 15. The target organization's main services

Translation and Localization – The target organization is one of the leading translation and localization service providers in the Nordic region. The aim is getting the message in the right language (translation) and in the right form (localization) to the customer according to the preset agreement. Localization refers to the process of translating software, manuals and applications which require a specific kind of translation management process. The target organization currently offers document translation, software localization, language quality services, terminology, localization consultation and technical support services.

Training & Competence Development – The target organization have long specialized in language training and they have grown steadily alongside their customers, increasing value-added services in order to support the customer's changing needs. The target organization currently offers general language training, thematic and tailored language training, intercultural skills training, leadership and management training, business seminars, digital and mobile learning and training calendar.

Terminology – The target organization supports the entire process of extracting, publishing and maintaining the required terminology needed in the organizational world. This is supported via multilingual strategy planning, terminology management, specific software and various dictionaries and glossaries.

Content products & services – The target organization's content product and service offering consists of ready off-the-shelf products and solutions tailored to individual customer needs including digital communications, simulations, training materials and customized content solutions.

Facilitating fast implementation strategies for new products and effectively measurable cost savings are an added value of the target organization. The organization provides many services related to the management of multilingual issues. It helps its customers identify and remove linguistic issues and employ language technology products whenever possible. The core of the multilingual approach is built in terminology referred by the organization itself as language capital in a crystallized form. Collecting and processing terms for use in the training and translation processes is also one of the target organization's special areas of expertise.

3.3 Key processes in the target organization

The key processes of an organization are those areas which contain vital information for the development and success of an organization's strategy. Such processes in the T&L business unit of the target organization include the Translation and Localization process and the Terminology process. Identifying and describing these processes is key in understanding the knowledge creation and sharing process of the case organization as seen in the following chapter.

3.3.1 Translation and Localization process

In the basic translation process at the target organization, the translation work is always carried out by a translator specifically selected and tested for producing various translations. The translations are then reviewed by another translator of the quality assurance section. The quality goal is a professional translation with flawless content that serves its intended purpose which is specified by the customer. Stylistically, the translation complies with the conventions of the original text, and the references to the specific field and other sources are checked and reviewed.

In their work, the translators utilize all tools commonly used by professional translators like dictionaries, the Internet, and translation memory software, if applicable. The translators also utilize any customer-specific term banks and the general instructions provided by the target organization for various translation fields. The project manager ensures that the timetable for

the delivery of the translation project is respected and that the deliveries are made according to preset agreements with the customer. The project managers of the target organization have been familiarized with the particular characteristics of various text types, and they follow the agreed process for the translation services.

The service is priced individually for each project. The pricing is based on several methods, including analysis with translation memory, hours worked and the charge agreed with the customer, as well as the price agreed with the subcontractors. Before the translation work begins, the project manager always submits a cost estimate that includes all the necessary stages of translation work.

The readymade translation product includes the following services:

- A dedicated team of various translators with appropriate education and experience
- A translation process specifically designed for various translation types
- A flexible service which meets the demands of the most urgent assignments
- A defined pricing model
- An extensive range of additional services (official translations by authorized translators, language review, terminology work, DTP work, technical conversions as well as interpretation services).

Figure 16 provides a view of the Translation process in the target organization.

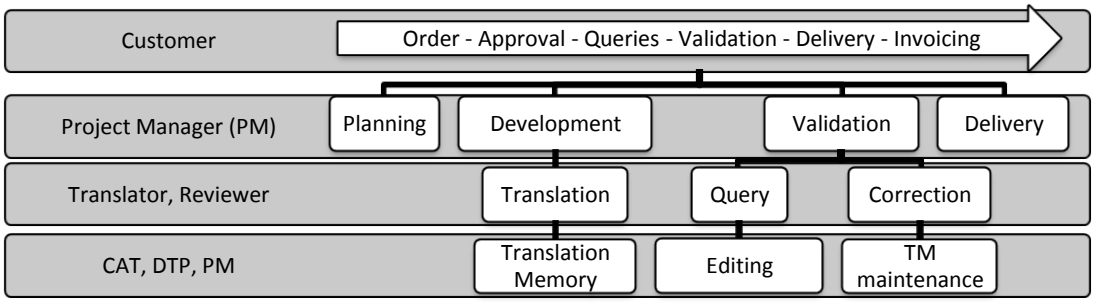

Figure 16. The target organization's summarized Translation process (adapted from the target organization's presentation material)

3.3.2 Terminology process

Terms constitute a major part of a professional's communicative competence. Product development, legal, technical, financial, human resources, marketing and other business units manage their work by keeping up-to-date with their respective terms. The terminology management system is a key part of the target organization solution and enables the publication of the customer's key terminology in all the needed languages on Intranet or desktop. The published terminology is a tool which is used in the customer's documentation to enhance its productivity. The customer can also use the published terminology in cases where the customer is complaining about the quality of a translation. The term work template available from the target organization's file servers is a useful tool for finding out what kind of terminological issues can be found in the material. The target organization can also do term work in case the customer wants to verify that the terms are the same as a specific given standard. Once a demand for a terminology solution is acknowledged, a project manager formulates a project plan and goes through the customer's material in order to point out which terms have been used, emphasizing those terms that have been used for one purpose. Once the terminology plan is approved, the project manager takes the necessary steps to implement it. The glossary that contains customer-validated terms serves as a guideline for the customer, translators, etc. The published terminology provides linguistic support not only for translation but also for documentation and marketing. Figure 17 provides a view of the Terminology process in the target organization.

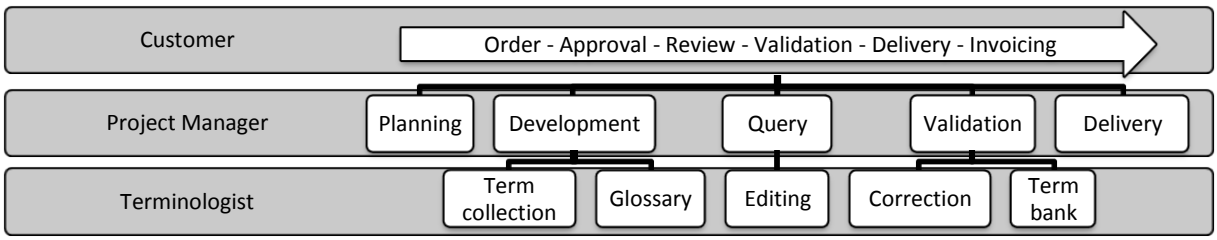

Figure 17. The target organization's summarized Terminology process

3.4 New Product Development (NPD) process in the target organization

For many years, the target organization has developed language technology applications to meet the continually developing challenges of multilingual communication. Based on this experience, the target organization has developed comprehensive solutions that can tailor the customer's needs among which two are worth analyzing due to their formation and complexity. Due to the confidentiality involved, the products will be named Product X and Product Y.

3.4.1 Product X

The target organization is a key translation partner to several firms and corporate departments. To respond to the customers' growing needs, in autumn 2009 the organization established a dedicated professional translations team for a specific translation field. The objective was to provide the customers with specific and dedicated specific translations by creating a process specifically designed for specific translations. Figure 18 shows a SWOT analysis for Product X.

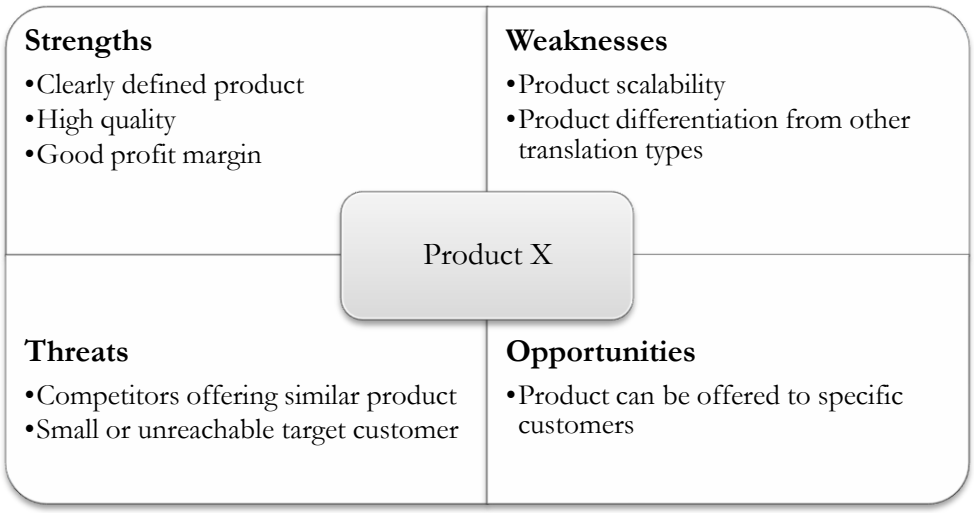

Figure 18. SWOT analysis for Product X

The reasoning behind the SWOT analysis choice and presentation for the new products is dual; I included its analysis in the qualitative research, as it can be noticed from the interviews in appendix 2 because I noticed that the data given to me by the company on these products was somewhat incomplete and failed to give the internal and external factors that help these products achieve their development objective. Furthermore, I think a SWOT analysis would be beneficial to the organization via helping both the product launch and sales phases of the NPD process. The generated SWOT analysis is a direct result of the interviews and the fact

that each of the interviewees gave different views on the same products shows that such analysis is important in combining knowledge and concentrating it in a single graphical representation as an organizational strategic reference.

Idea generation

According to the Product X product manager, the target organization understood the profit potential involved in specific translations. They recognized that certain customers charged substantially and their hour fee was very high compared to the translation cost, so once the team was formed, it mapped from the customers the need for such service and noticed that there was the possibility for a good profit margin in this specific translation field.

The team responsible for the product development included the product manager who was also team leader, customer manager, vendor manager responsible for providing both internal and external resources (translators), a key account manager and translators as represented in figure 19. Experienced in specific translations, the translators involved in the process understand the terminology and constructions specific to target documentation and are able to respond in time to the demanding tasks of the target translation field.

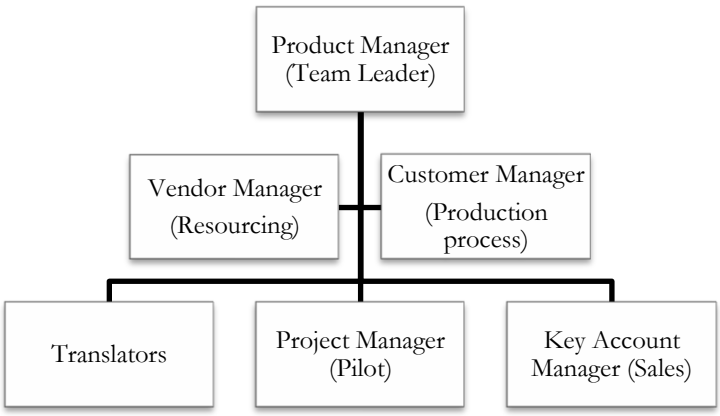

Figure 19. Product X development team

Concept development

The Product X concept was developed in the formed team. However, according to the pilot project manager, she was involved in the team later by the end of 2009, which suggests that the main players in the concept formation were the rest of team except the translators and the project manager. The concept development followed the stages described in the theory:

- Problem definition – During this stage, the team members discussed the possibility of a differentiated product which would include the specific translations. A key factor was the added value and high margin of profit with a potential easy selling possibility.

- Concept generation – The team members finalized the concept including potential issues such as pricing, vendor and customer reaction to the product.
- Concept evaluation – Once the specific translation concept was finalized, a pilot project manager was appointed to test the product feasibility and run specific translation projects.

Technical development

There was no technical research in per se for the specific translation product; however, the technical part was necessary in the formation of the marketing material which would then be used during the product launch phase. Such material includes PowerPoint presentations, brochures, readymade advertisements, and specific translation texts.

Product launch

The product launch for the Product X follows the stages described in the theory part including planning, positioning and execution.

a) Planning – This initial phase has already been laid out and includes:

- Sales objectives for 2010 including a profit margin target
- Sales channels will be direct via telephone and e-mail contacting of both new, non-regular customers and existing customers. Appointments will be made to the key accounts to discuss the product details in person. A number of selected companies will be targeted with direct mail in form of advertisement brochures.
- Promotional functions include participation in specific events
- Resources monitoring will be evaluated once the promotional functions have been achieved.

b) Positioning and execution – The positioning phase includes a marketing campaign which will determine the sales channels in question and which was completed in spring 2010.

3.4.2 Product Y

Product Y is a set of tools that helps users in translating texts, as well as in managing and using terms. The tools can be used with the most common computer applications. The feasibility of product Y development is influenced by the fact that the core of the project planning is a previous project and by the exploitation of the core expertise of the product development members. A key factor is also the support of the organization top management for the project. In addition, the financial means of the project are secured due to the financing of the previous

project. According to the feedback, there is a market demand for the product itself as described in the SWOT analysis of figure 20.

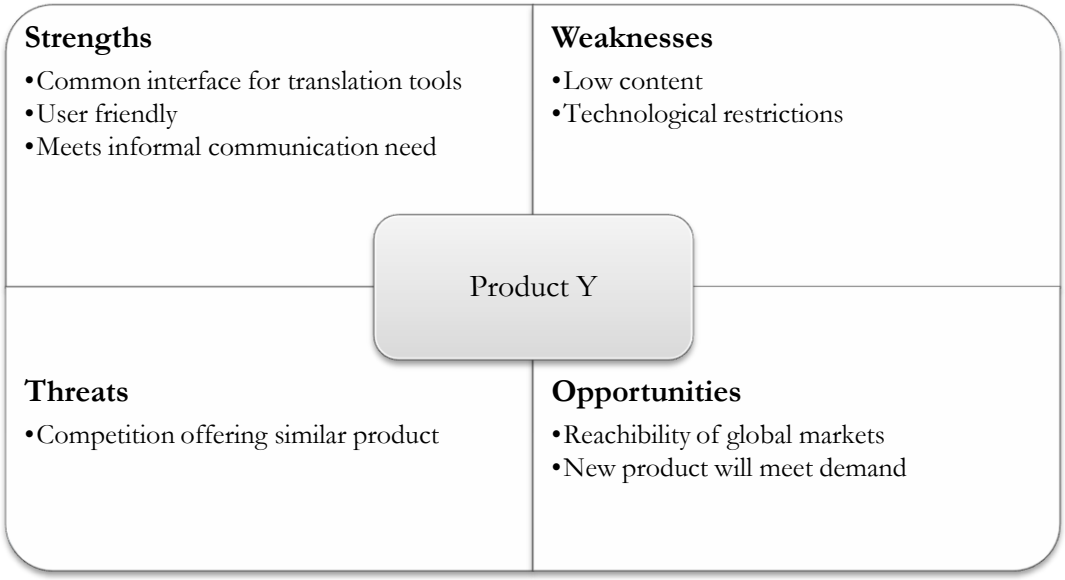

Figure 20. SWOT analysis for Product Y

Product Y enhances everyday work by making fast internal or informal communication in foreign languages possible without the help of a translator. It also reduces queries and translation requests to colleagues with the skills in the needed language, which saves everyone's working time.

Idea generation

According to the Product manager, the basic idea was to join all the language services under one common tool. The tool has been developed in order to aid the user, reader and writer. The idea for the Product Y was already developed before the Product manager's arrival at the target organization, and some people responsible for the idea development have already left the organization. Some of the people involved included a former director of the R&D sector at the target organization, and a consultant.

Concept development

The concept development benefited from the previous project joined work. The team responsible for the development of Product Y had in practice, free hands to develop the product. The starting point for the design was to offer services such as term and glossary search service, as well as automated translation. In addition, the purpose was to benefit from the so-called accelerators of Internet Explorer via which, web search could be achieved directly with-

out the need of opening a new browsing window. From the beginning, it was clear that the core of the product are the terms from which the user can perform searches, as well as benefiting terms in the automated translation. The core team is represented in figure 21 given below:

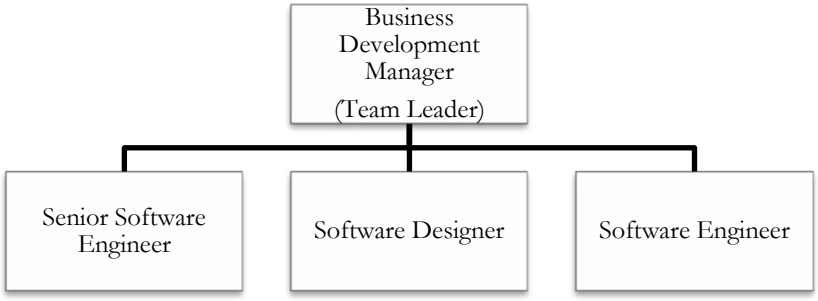

Figure 21. Product Y development team

Technical development

Although the project itself dates many years back, the technical development of Product Y took off in the last quarter of 2009 by working on the first version of the product. During the first months of 2010, a survey was conducted via the Document Management Platform 2010, targeting the key customers of the organization in order to assess the need for the Product Y. Between the end of 2009 and beginning of 2010 attention was paid to the development of language management models which would serve as basis for the development of the product. The second quarter of 2010 was dedicated to the selection of the pilot customer who would be chosen as testing ground for the application. This involves a group of 20 people in a selected organization who will test the product and report to the target organization on the usability of the product. Once the pilot program is developed and testing results achieved, in the third quarter a feedback will be given and the next product version developed accordingly.

Product launch

This phase is currently under development; however the sales channels are expected to be similar to the ones described for Product X. According to the product manager, the launch of the Product Y is expected in autumn 2010.

3.5 Research findings

Knowledge creation is a present constant in the Translation and Terminology process of T&L business unit of the target organization. The process follows the knowledge creation patterns already present in the organization. Below the survey results are given serving as the backbone for the knowledge creation and sharing analysis in the organization.

3.5.1 Survey results

The survey was aimed at the employees working in the Translation and Localization business unit of the target organization. However, people working in other areas participated in the survey as well. The questionnaire was sent via e-mail to sixty employees and the survey participation average turnout was fifty percent. The participants were reminded once to provide their answers and the majority of the respondents provided their answers within a week of the sent questionnaire. The employees who participated in the survey are listed in figure 22 including their percentage share in the overall amount.

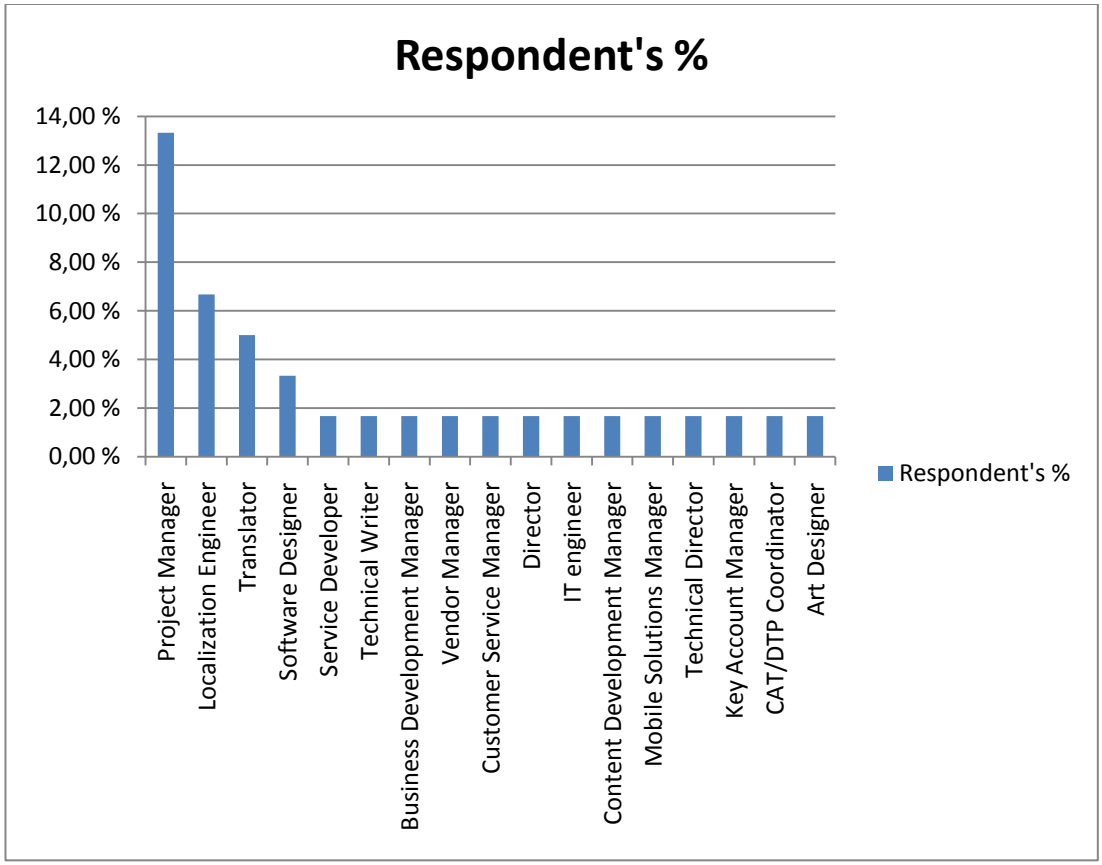

Figure 22. Survey's respondents' participation percentage (%)

The figures for the survey questions with the frequency distribution percentages calculated for each given answer are given below in graphical form with comments. The question can be found either in Appendix 1 or in italics below. The numbers on the right of each figure refer to the questions themselves, while the letters on the bottom refer to the possible response options for each question. At this point, the presentation of the survey results is not organized in themes to make it easier for the reader to refer to the questions in numerical order directly from the appendices section of the thesis. In addition, the structure of the questionnaire itself is organized in a uniform way centering on the knowledge creation and sharing in the target organization.

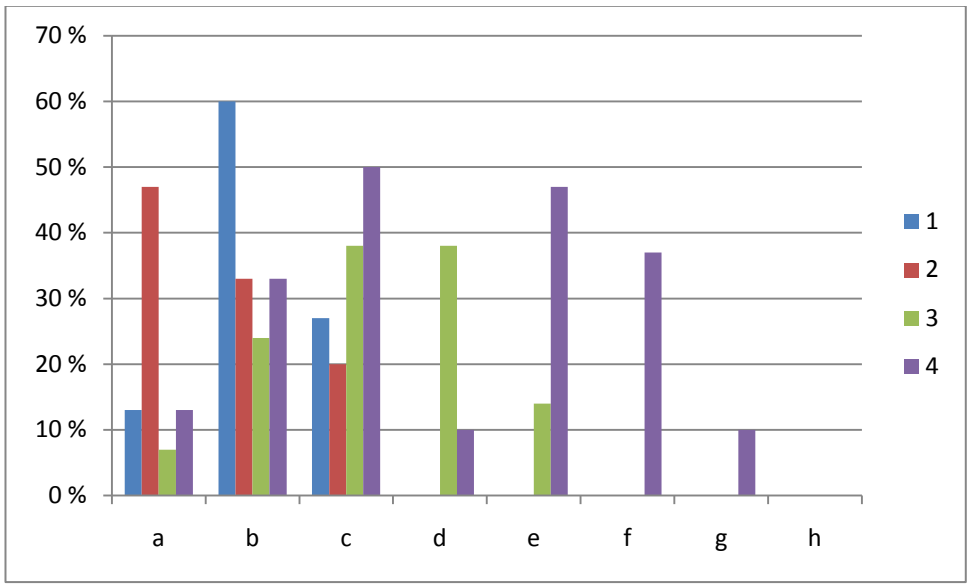

Figure 23. KC survey results, questions 1-4

As noticed in figure 23, the majority of the respondents (60%) deem *the current situation of knowledge creation in the target organization* (question 1) as satisfactory (option b), 27% consider it good (option c), 13% not present (option a) and none consider it excellent (option d). Some respondents base their answers on their intuition, since they have no previous experience in knowledge sharing in other organizations. The tendency is towards basic information sharing, knowledge is more confined to a "need-to-know basis", taking place in the course of normal work routine but lacking as a dedicated process. This tendency is further emphasized by the fact that knowledge creation and sharing happens on an individual level with no structured training procedures. According to some respondents, knowledge sharing forums could improve the current situation in the organization.

Theoretically and within certain teams, there seems to be more knowledge creation and sharing in the organization but the majority of the employees rarely comes in first-hand contact with it. Especially problematic are the links between the forums and knowledge creating environments which are often weak or non-existing. Information is also difficult to find when needed which increases the difficulty of sharing knowledge in its processed form. Even if in everyday work there is a knowledge creation, its results are not effectively shared with the entire organization.

The majority of the respondents (47%) think that *the target organization does recognize knowledge creation and sharing as part of their core processes* (question 2, option a), 33% do not think the organization recognizes such processes (option b) with the remaining 20% not having an answer on the subject (option c). Currently, there are several strategically important projects ongoing in the organization where knowledge creation and sharing is recognized. The Quality Assurance system is also classified as an important asset of building-up knowledge, since it requires that documents should be available to all relevant parties however, this may be only official since in practice, according to some respondents, the knowledge is not openly shared and for other respondents, there is little experience in this field.

Other respondents emphasize the fact that the current File Server System is outdated and the new Document Management Platform solution is still under development. Concrete steps in the knowledge creation and sharing are lacking although the core processes do emphasize them but not as separate processes. Knowledge sharing in the Translation and Localization business unit is necessary and if not done, it will affect the service process and show in the customer interface; thus it is rather business than organizational driven. Some respondents do acknowledge the fact that knowledge creation and sharing might not be one the target organization's strengths; while officially it is considered important, it is made hard to accomplish on everyday basis. The possibilities, resources and tools to create and share knowledge are few in practice, although the organization recognizes their importance. The respondents point out that core processes are also very little discussed on an inter-team level.

The majority of the respondents (38%) describe *the target organization's organizational culture on knowledge creation and sharing* (question 3) as being everybody's duty (option c) but at the same time also unsupportive (option d), with 24% thinking that the organization has an open and supporting culture (option b), and with only 7% considering that the target organization's core values emphasize on knowledge sharing (option a). According to some, the economic reces-

sion in 2009 created an atmosphere in which knowledge is a crucial asset to own but not share with others. In everyday work, knowledge creation is difficult to notice with a discrepancy between theory and practice. In addition, each team has its own way of sharing knowledge which partially supports organizational culture due to the lack of inter-team knowledge transfer.

The main knowledge-related challenge in the target organization (question 4) is deemed to be the lack of a clear strategy (option c, 50%), with a close second being poor sharing of knowledge within the organization (option e, 47%). Other responses include lack of time (option f, 37%), too much information (option b, 33%) and loss of valid knowledge due to a key employee leaving the organization (option d, 10%). Although the Document Management Platform use is increased, currently it contains mostly marketing material, or material needed by the top management or sales personnel. Information is exclusive not inclusive, depending on which team a member belongs to. Respondents also point out to the challenge of how and where to store knowledge in combination with a lack of resources for knowledge-related processes.

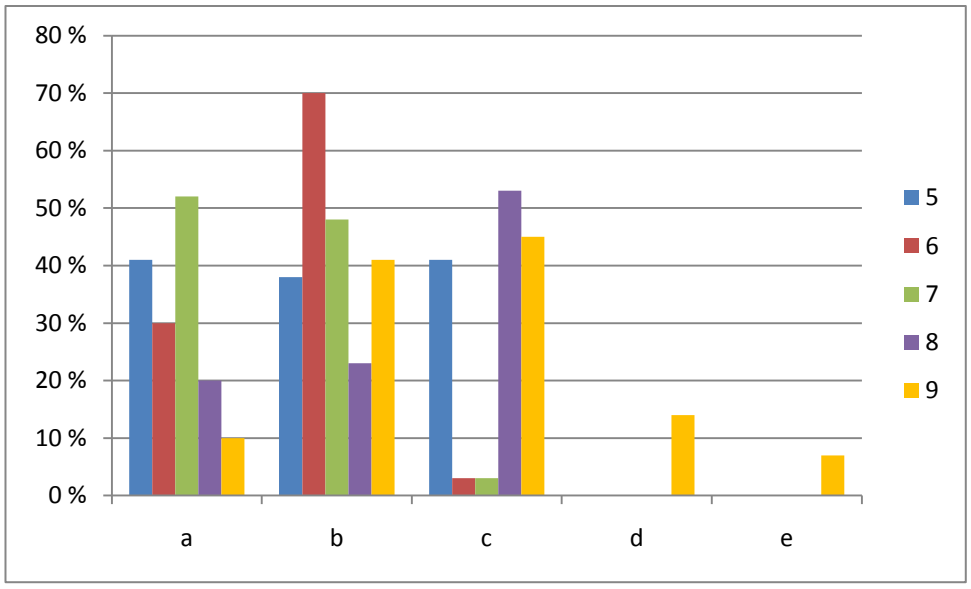

Figure 24. KC survey results, questions 5-9

Figure 24 shows that the respondents' opinions are divided regarding *the most important form of knowledge in the target organization* (question 5) with the slight majority leaning on the documented (explicit) knowledge (option a) and the ability to create a product, service or project (tacit not-yet-embodied, option c) both tied at 41%. The ability to develop a product, service or project (tacit embodied, option b) is preferred by 38% of the respondents. According to some employees, the target organization's organizational culture supports thorough documen-

tation of processes and information security is paramount. Documented knowledge is indeed present; however, the development of both tacit not-yet-embodied and tacit embodied knowledge is deemed beneficial to the organization. Tacit knowledge is needed present on a daily basis in the product development; in fact, practice has shown the importance of tacit knowledge when collecting records however, explicit knowledge in form of written instructions is always needed for personnel issues.

The majority of the respondents (70%) feel that *the documented knowledge in the target organization* (question 6) is quite important but not updated regularly (option b), 30% regard it as very important but time-consuming (option a) and only 3% do not place importance in it due to gaining key knowledge via team meetings and training (option c). For some, the process of updating knowledge and its storage in sensible places in the organization is underdeveloped. More is needed to be done for both the documentation and its updating process. According to others, sometimes there seems to be a lot of information flow but as there is no cost pool for getting acquainted with it, people do not bother to spend personal time. For others, from the viewpoint of the T&L business unit, it is essential and important to document relevant information related to customer specific information, and this works just fine without being too much time-consuming. One example is Intranet and the File Server System, which contain both new and old information.

Opinions on *the tacit knowledge in the target organization* (question 7) are divided. The slight majority (52%) consider it very important but underestimated (option a), 48% consider it important but difficult to grasp (option b) and only 3% do not give any importance to it (option c). The tacit knowledge issue surfaces whenever someone leaves the organization. In addition, some respondents feel that too much information can be a detriment too, especially when one has to go through a lot of explicit knowledge in order to perform task hampering productivity. According to others, most of the jobs and the processes in the organization are relatively simple and do not take years to master. It is fairly easy for a summer trainee for example, to grasp the surface level of needed information in order to perform his/her job on a satisfactory level at least.

Some of the respondents state also that knowledge should be documented whenever possible, especially in the project management. Many of the tasks and processes in the organization contain a large number of detailed information and the employees who have gained their

knowledge in them should not be underestimated (the CAT function just as an example). However, more experienced employees have developed deeper knowledge schemas which are shown in the productivity performance. The target organization's organizational culture is also considered a factor in supporting tacit knowledge and without the latter, there would simply be impossible to work since not all information can be documented due to its quality change.

The most supported tacit knowledge among the respondents (question 8) is know-why and system understanding (option c, 53%), know-how tacit knowledge and routine tacit knowledge were supported by 23% (option a) and 20% (option b) respectively. Systemic thinking is considered by some of the respondents not a critical competence in the organization, while others acknowledge that tacit knowledge shows the dynamism of the target organization's organizational culture.

Knowledge creation process in the target organization (question 9) gives mixed responses. The slight majority (45%) thinks that top management is interested but could support it more (option c), 41% thinks everyone contributes to it (option b), only 14% acknowledge it as part of the organizational culture (option d) and 10% relate it only to the NPD unit (option a). Some respondents feel that the Document Management Platform is being used as a tool in the knowledge creation process, since it will store all service, quality and sales documented explicit knowledge, however others question the existence of such process in overall.

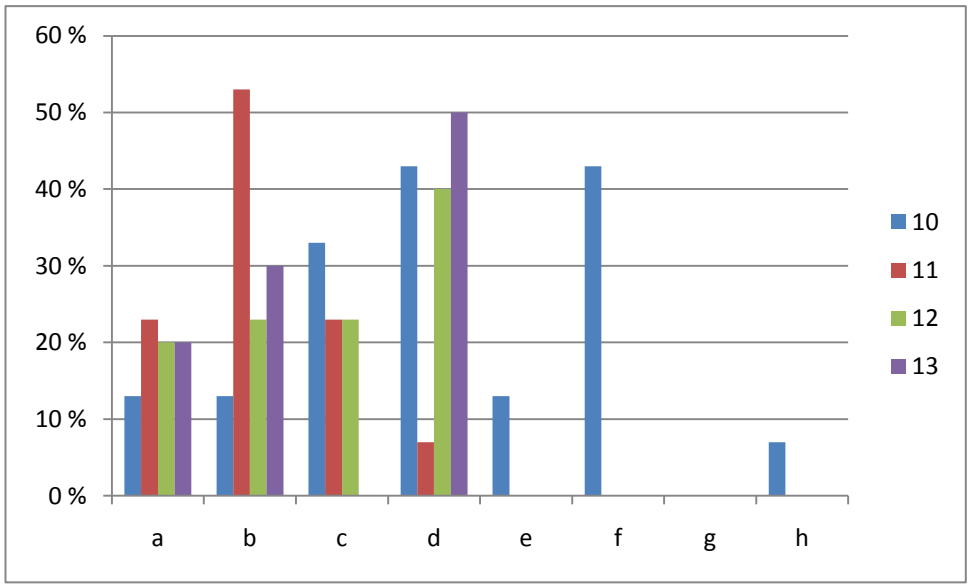

Figure 25. KC survey results, questions 10-13

Figure 25, shows that *the most important parts of SECI I and II processes in the target organization* (question 10) are considered the Internalization of SECI I (option d, 43%) and Externalizing (option f, 43%). Combination (option c) is instead supported by 33% of the respondents. Socialization (option a), Externalization (option b) and Sensing (option e) are supported by 13% of the respondents; while Initiating (option h) receives 7% and Consenting (option g) surprisingly no support (0%). Some of the respondents feel that the Initiating phase is not encouraged within the organization; on the contrary the employees seem somehow threatened by it which might derive from the organizational culture of the target organization and the need to belong to a specific group within the organization. Some respondents acknowledge knowledge gain by talking with colleagues, observing day-to-day work and problem-solving of issues within the team.

The most important knowledge-creating space in the target organization (question 11) is deemed the dialoguing Ba (option b, 53%), originating and systemizing Ba (option a, and c) were preferred by 23% of the respondents while only 7% backs the exercising Ba (option d). According to the top management, the current situation of the knowledge-creating medium in the T&L is somewhere between dialoguing and systemizing Ba. In this light, intra-team meetings are of key importance; however inter-team meetings should be promoted. In fact, some of the respondents are happy to have joined projects with other teams outside the T&L unit.

Routine knowledge (option d) is deemed *the most important type of knowledge asset present in the target organization* (question 12) backed by 40% of the respondents. Systemizing and conceptual knowledge (option b and c) are supported by 23%, while 20% are in favor of the experiential knowledge (option a). In some respondents' view, the organization used to be very good at improvisation; however, with fewer people at work due to lay-offs, this is not so common practice anymore.

The majority of the respondents (50%) does not know *the top management's view on knowledge creation and sharing in the target organization* (question 13, option d) and they express the need for a strategy on the issue; 30% think the top management sees the knowledge-creating process as very important but hardly supports it (option b), 20% respond that the organization provides full support on knowledge management strategy (option a), while none (0%) think the target organization sees the process as unimportant (option c). The respondents feel that on the top

management level, things are changing for the better however, it will take time to reach all business units. There is also a tendency to leave the management of the knowledge-creating process to specific supervisors and team leaders. The communication given to the employees is at times contradictory which does not promote information processing and its subsequent conversion to knowledge.

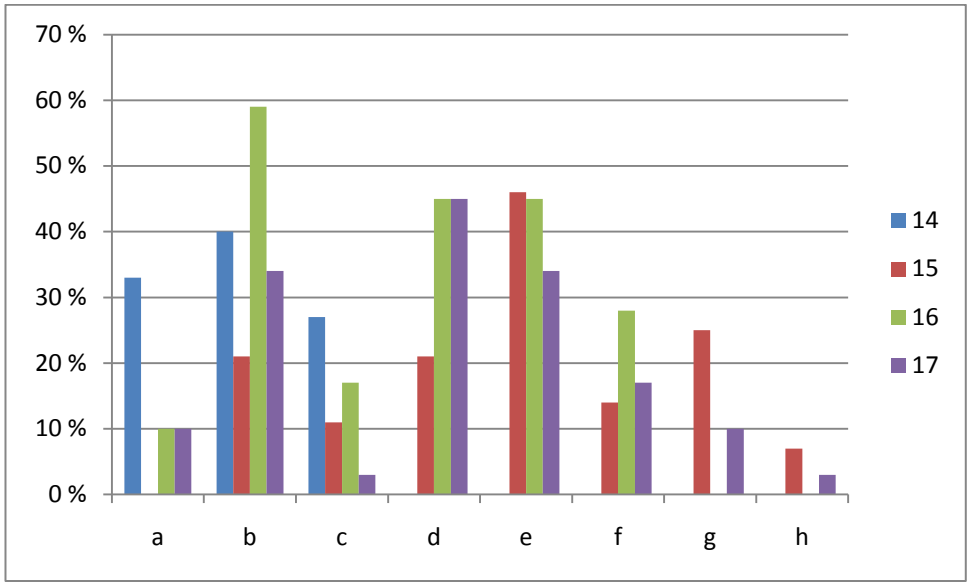

Figure 26. KC survey results, questions 14-17

According to the majority of the respondents (40%), the target organization *does not actively create nor share knowledge* (question 14, option b); 33% think the organization does create and share knowledge (option a) while 27% are not able to provide a clear answer (option c), as seen in figure 26. According to some respondents, knowledge creation and sharing within the organization is noticeable in the form of documented processes, to others the knowledge-creating process development depends from the supervisor's requirements and it occurs on the individual level. Others consider the Document Management Platform as a direct representation of the organizations efforts in promoting knowledge-related processes although it is not utilized in all organizational levels.

However, others feel they do not know what their colleagues or other teams/departments do, what kind of knowledge and skills they have, and in what way they could benefit from each other's knowledge and skills since everyone is just doing their job. Some respondents agree that talking about one common knowledge creation process of the target organization is difficult because this happens only in certain teams, not all of them.

The biggest barrier in the knowledge creation and sharing in the target organization (question 15) is deemed the fact knowledge sharing is not considered part of the routine daily work (option e, 46%). Other responses include: lack of rewards (option g, 25%), lack of trust and motivation (option d, 21%), lack of participation in decision-making and lack of training (option b and f, 14%) and unwillingness to share knowledge (option c, 11%). The language barrier is not an issue in the target organization since none of the respondent identifies it as a factor (option a, 0%). According to some respondents, lack of time is another key issue; knowledge sharing is nobody's key responsibility but it is done if there is time for it, and mostly this is not the case. Another potential barrier is considered the fact that during their work process, employees do many things for granted without realizing that some of this embedded knowledge might be also useful to others as well.

The biggest problem faced by the target organization in creating and sharing knowledge (question 16) is the fact the database of the organization is too scattered and complicated (option b, 59%), lack of time to learn and inter and intra-team communication issues (option e) comes second at 45%, with the rest as follows: technical issues (option f, 28%), lack of dedication within each team (option c, 17%) and lack of training (option a, 10%). A substantial communication problem is considered the lack of interaction across teams/departments/business units. One technical issue instead emphasizes the fact an up-to-date and good Intranet is missing.

The biggest organizational problem in implementing knowledge creation and sharing processes (question 17) is the lack of resources (option d, 45%), lack of knowledge-related process understanding and lack of management commitment to the cause (option b and e, both 34%), technical limitations (option f, 17%), attracting and retaining talented people (option g, 10%), lack of trust and motivation (option c, 3%) and internal communication issues (option h, 3%). Some respondents emphasize the fact the unit/team leader should give a greater contribution to the acquisition of knowledge.

The causes of insufficient knowledge provided by the target organization (question 18) are listed as follows:

- Knowledge is scattered in many places within the organization
- Knowledge location, availability and status are unclear
- Non-adequate training

- Various unmanaged Intranets available
- Lack of inter-team communication
- Outdated information present
- Too many file servers without equal accessibility
- Knowledge and skills-building is seen as a secondary activity.

Figure 27 presents some of *the steps the respondents felt they as individuals and the target organization as an organization should undertake to improve the knowledge creation and sharing* (questions 19-20):

Organizational

- A common knowledge base and proper tools to create and maintain the database
- More training on new tools to create and share knowledge
- Guidelines on knowledge base utilization
- Improved technical solutions to meet knowledge-based demands
- Centralized knowledge creation and sharing process
- Centralized location for documented knowledge
- Increased team leaders and their managers involvement in knowledge creation (KC) process
- Mapping of employees' individual knowledge
- Promote an organizational culture based on knowledge sharing
- Shared and improved databases accessible to all personnel
- Work rotation is necessary to share knowledge between teams and business units (BU)

Individual

- Better resourcing for documenting knowledge
- Creation of a functioning and comprehensive Intranet solution to share knowledge
- Better internal communication via improved inter and intra-team meetings
- Improved top management capability to transfer responsibility to personnel
- Division managers monthly presentations to all personnel
- A search- function for the databases is needed
- Increased informal communication within the organization
- Better top-down communication
- Document personal knowledge such as work instructions
- Hints to peers on potential knowledge use
- Periodical discussions with team members

Figure 27. Knowledge creation and sharing improving steps in the target organization

As it can be observed, the survey results vary in accordance with the respondents who answered the questionnaire. The variety of answers is derived from the fact the employees are part of different teams and employed at different tasks within the organization. An interesting fact observed is the way how the respondents answer; the most critical ones are more individually oriented, while the most positive answers come from people who believe in teamwork and see themselves as an integral part of the knowledge creation process in the target organization.

3.5.2 Summary of interviews

The interviews are organized according to the target organization processes which include: Sales, New Product Development and Knowledge Creation and Sharing. The interviews questions are semi-structured, individually based and the interviewed people are involved in the following positions: Product Manager, Business Developer Manager, Key Account Manager, and Project Manager.

Sales – The target organization has different customers and different products which require different sales processes. There are currently two main sales processes in the organization: the frame agreement sales process which occurs in great volumes after which, the process is an ongoing sales work, most of which is done by the business units, including project managers and coordinators. A relevant problem which comes up during the interviews is the presence in the organization of too many products and service areas, too many complicated documents, which make it difficult to cope with all the scattered and not up-to-date information, while knowledge sharing is still a present issue in the organization.

New Product Development – The development of new products is constantly present in the organization however, planning and a long term strategy has been lacking until now in the product development process. The product development process is not clearly understood and there is too much information on too many products. The information on the NDP process is not shared equally in the organization; this is noticeable with the inability of some of the interviewees to describe the process itself. In addition, a natural communication with all the parties involved in the product development process (sales, business units, etc.) is lacking. According to the interviewees, the most important stage of NPD process is the concept development with the product launch coming a close second. The problem with the product development process is that it remains mostly in the theoretical level; in practice, it is difficult to evaluate how the project manager will market the product and how this product would be made in such way that it differentiates itself from the rest of products; this applies especially to the Product X.

Another problem regards the resources, are there enough resources for such products and how to find new ones to respond in real time to the customer's needs. The main challenge is the lack of time, since for a new product, the challenge is the pricing strategy and the contract agreements with the partners as is the case for Product Y. In addition, the role of the sales and

the product development in the marketing of new products is not clearly defined. Such is the case of Product Y development when a person was appointed as productization supervisor in the middle of the ongoing project. In this case, work sharing between the productization supervisor and the product development manager is also somewhat unclear, although this is a direct consequence of the person joining the team later on.

Currently, a program is being developed whose purpose is to pinpoint and enhance the project managers' sales potentiality. The aim of the program is to enhance the hidden sales and marketing of products by the project managers in the form of brochures, presentations and other marketing material sent to the customer mainly by e-mail. However, this does not mean that the project managers will become sales people, the role of the sales person is still indispensable in meeting and finalizing the customer's need. The aim of the program is to raise the interest of every customer, especially the skeptical ones for our products.

From the team management point of view, the interviewees express that the teams had done a good job. Each team has faced one particular problem; the Product X team found it difficult to make a pricing strategy, as well as offer it properly to the customer, while the Product Y team noticed a problem when they intended to take advantage of the new batch of technology whose information was not meant for the market. Another issue is that the members of the team have to continuously complete production customer project tasks and they do not have the possibility to focus only in the Product Y development project. There is no alternative for this, as the team members possess such knowledge that no one else has in the target organization. Only the team leaders have enough information about the product development process, this means that while the intra-level teamwork is functioning, the inter-level is particularly lacking. It would be good that all the people who have knowledge about the product to be present in its development, to avoid asking people's opinion at a later stage. One problem is that the technical development goes far ahead without asking those who are going to use this product internally about their opinion, possible comments and changes.

Translation and Terminology – The translation process is known and easily applied in the organization, however the terminology process remains confusing. There are too many available tools but there is a change for the better occurring with the introduction of new services. The confusion comes from the fact nobody knows exactly what the main tool to use is. This is a direct consequence of the fact there are too many tools involved in the term projects with the latest introduction of Product Y. It continues to be confusing the fact that the tools are

used in parallel. A key missing information is what term work has been done to a specific customer.

Knowledge Creation and Sharing – According to the interviews, knowledge creation and sharing depend largely on the teams involved in the process. The sales team receives very up to date information. There have been efforts in improving knowledge sharing for project managers via different meetings and workshops but at present the sales receive much more information than the rest. The reason for such knowledge sharing discrepancy can rely in the fact that the process has not been thought of in its entirety, the product information has been long thought of belonging to the sales department since the information channels were there already in place. All the interviewees stress the fact that the majority of new products information is channeled indirectly. Knowledge and information sharing channels are not fully present; there is still lack of information about the products being currently used and to what extent. There are people in the organization who do not know what is a specific team working on. Information needs to be concentrated and shared to all parties and not necessarily to only those involved in the process. Although by asking, information can be gained, this is not possible for knowledge, for which individual in-depth processing of the information is necessary.

The information from the previous product development project is not easily available. In addition to this, knowledge sharing and knowledge flow problems from the product development unit to the outside increases the difficulty of the product development cooperation with other units such as sales. The merger between the former and current the target organization is seen as a factor which has increased the amount of the products available to the customer without increasing the amount of knowledge each employee possesses about these products; hence the merger came a bit too quick and this factor increased the individual knowledge pressure inside the target organization.

The loss of an employee leaving the organization also creates a knowledge void which is difficult to replace immediately. If such thing happens, the replacement should already possess that kind of knowledge that the person can directly share with its co-workers and partners. The situation seems problematic in the terminology process; knowledge there is indeed concentrated but it is very mixed, including updated and outdated information. The steps to overcome the issue are already present but the implementation requires a long time due to its slowness. The interviewees agree that the Document Management Platform should be the new supporting tool for knowledge creation and sharing challenges. Especially the latest ver-

sion of the Document Management Platform has many features which serve this purpose. The target organization needs a common Document Management Platform page in addition to parallel pages, which can be accessed by all the organization employees. The information can be also shared via the organization's Intranet although it should be channeled first in one place such as the Document Management Platform.

In the Translation & Localization (T&L) business unit, there are many employees who do not know at all about specific products such as for example Product Y. Same applies to the competence development sector as well. However, there is a belief that with the development of specific programs, the aim is to improve the knowledge sharing between different business units within the organization. According to the interviews, a valid solution would be to simplify the way the product are shown and talked about. Knowledge sharing should be more systematic when more resources are present to accomplish such goal. The organization should also look more into its direct competitors' activity and their products as well as recruiting the right people especially from the technological point of view, since technology is developing fast.

A valid improvement would be the presence of meetings arranged between the product development team, technical support team, training team and the project managers where new ideas would be shared on how the existing products can be improved and new products created and everybody's opinion taken into account. Internal communication and cooperation should be further developed, the very fact the sales and the competence development are physically in different premises is a hampering effect in the communication and cross-boundary teamwork.

There should be an increase of the cooperation between different business units. In addition, the employees of the target organization need additional training for example, regarding knowledge and the processes linked to knowledge sharing. The target organization needs a stronger top management as well as a clear goal for their activities. The profiling of the organization specialists would be important asset, while the clarification of the processes, quality control, promoting the wellbeing at work and orienting the worker's skills in the right direction are valid points in promoting knowledge creation and sharing.

3.5.3 The Knowledge Creation (KC) process in the target organization

My analysis of the knowledge creation in the target organization is a combination of both SECI I and SECI II since, based on the reviewed literature, tacit not-yet embodied knowledge is deemed as a crucial participant in the knowledge creation process.

The SECI I process

Socialization is the process of converting tacit knowledge into new tacit knowledge through shared experiences. This practice is used in the Translation and Terminology process of the target organization, especially in forms of apprenticeship/mentoring and training programs. The mentoring program is applied to new employees and involves a minimum period of two weeks. This method was used for me when I first started to work for the organization. The mentoring program stages in the target organization can be split into the following stages:

a) Identifying the potential mentor – this is a top management role (customer manager);
b) Planning the mentoring program – this is a combined work of both the top management (customer manager) and the middle management (project manager). There is usually one project manager in charge of the mentoring program implementation. I did not notice more than one project manager being involved at the same time in such program;
c) Providing the mentoring tools – this phase was implemented by the ICT- personnel which provided me with a phone, and a computer with the necessary pre-installed programs needed to independently manage projects;
d) Implementing the mentoring program – the implementation phase lasted from two weeks to one month after which I was able to run the translation project on my own;
e) Progress tracking & evaluation – in my case, the person in charge for tracking my progress was the customer manager who monitored my performance and the performance discussion was held three times over a period of five months.

Personally, I find the socialization phase extremely important in learning new tools and applications; also helpful are the continuous questions I ask to my colleagues during my work. However, according to the survey results, socialization is not deemed important enough. This is due to the fact that the majority of the employees have already been in the organization for

some time, thus not requiring any apprenticeship program while the informal meetings are not part of the organizational culture.

The conversion of tacit knowledge to new tacit knowledge is noticeable in the idea generation phase of the New Product Development (NPD) process. According to the interviews, in both Product X and Y, the idea behind these products is generated first in informal meetings between the top management and previous similar project managers, after which a team is assembled for concept and technical development. Such meetings make the team more cohesive as its members learn to share information and knowledge with each-other. A key factor which contributes to the team cohesion is the degree of trust between the peers, as the team itself is filled with good spirit and desire to contribute to the common knowledge goal. In addition, the premises are an important cohesive factor in promoting creativity within the team.

According to my observations, the teams' nature is a determinant factor in the socialization visibility in the NPD process. In contrast to the socialization process, in the Translation and Terminology process, the socialization in the NPD process lacks mentoring programs. The reason for this relies in the fact that the NPD team member already possesses key knowledge which is relevant to the project and mentoring is therefore not necessary.

Externalization is the process of converting tacit knowledge into explicit knowledge. The externalization process in the target organization happens mainly via formal team meetings. The Translation & Localization business unit is divided into five teams as shown in figure 28.

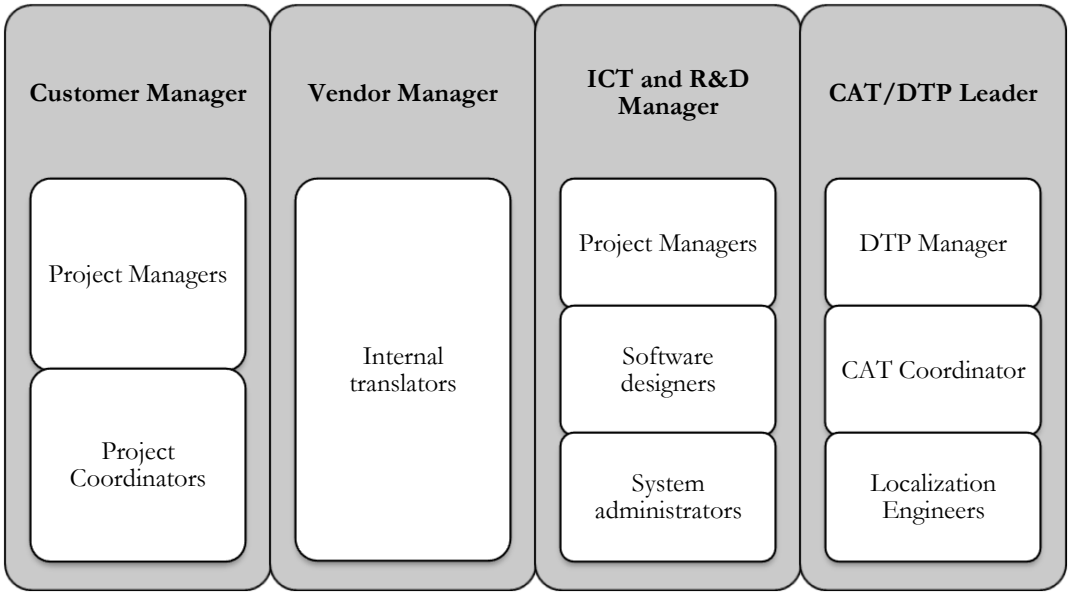

Figure 28. The teams' configuration of the Translation and Localization (T&L) business unit of the target organization

According to my personal fieldwork observations, each team performs quite independently from each-other, which in turn increases the output volume of the team but also decreases the communication level in the inter-team level. The team meetings content also varies in the organization, some team meetings tend to be more informal, increasing the level of trust between peers but decreasing however, the level of meeting output volume in terms of decision-making and team milestone achievements.

E-mail is an extended method used by the top management in sharing important tacit knowledge; while this is a great opportunity to learn on the spot, the externalized knowledge can easily be lost in the e-mail or go unnoticed due to the large e-mail volume flow in and out of the organization. According to the survey, the majority of the employees in the target organization do not rely on much this process as individuals. This does not contradict my earlier explanation since the externalization happens mostly within teams, where the individual perspective is faded. The conversion of tacit knowledge to explicit knowledge is noticeable in the concept development of both Product X and Y. Although the Product X is defined as a new product, it is in reality an extrapolation of an already existing type of translation for which, development processes are already known. Product Y instead, is a new product in its entirety although based in previous projects, and the knowledge created is transferred continuously internally (intra-team level) and externally (inter-team level), slowing the overall externalization process.

The documented material for both these products is concentrated in the Document Management Platform. Such documentation includes technical material, advertising brochures, video, presentation texts, user guides, and different set of sheets for sales purposes, as well as different support material. According to the interviews, Product Y documentation access in the Document Management Platform is currently restricted. This can be explained with the fact the product is currently still under development and explicit knowledge present in documented form needs to be filtered in order to be presented to organization. Product X documentation access in the Document Management Platform is easier since the documentation process is facilitated by the nature of the product.

Combination is the process of converting explicit knowledge into explicit knowledge. The existing of a substantial database is a clear sign of the amount of externalized knowledge collected in the target organization. According to my observations, a major problem with the

existent database in the organization arises from the database structure being highly scattered. This increases the chances of not finding the information one is looking for and decreases the possibility to update the information often. In fact, I notice that the majority of the time, I have to already know what information I am looking for and where to find it. In addition, once I find the information I seek, I cannot not realize is it updated or not, unless I contacted the people responsible for uploading such information. The survey confirms the importance of this process in breaking down corporate vision and product concepts into operational business units, by being the second most voted option by the respondents.

Explicit knowledge is available for both Product X and Y, although the latter is still under development. The majority of the explicit knowledge is concentrated in the organizations File Server System and the Document Management Platform content management software. The Document Management Platform is currently used by sales people and it has recently been introduced also to the project managers who now have the possibility to access the information present there. Product development teams have already been using the Document Management Platform as a synthesizing tool for the already present explicit knowledge.
Another important part of the knowledge conversion via combination is represented by the quality control. The NPD process in the target organization is mainly a project management process during which an important part is dedicated to the requirement that the team leader goes through the work done by its peers and discusses the feedback results. A valid help is provided by the customer viewpoint as in the case of Product Y, where the customer serves as a testing module for key features of the product development.

Internalization is the process of converting explicit knowledge into tacit knowledge. There is a great deal of externalized knowledge in form of documented material available from the organization, however the main issue with its use is the complexity and the distribution of such documentation in the database and the tools used to share such documentation. At the moment, the target organization uses many tools which serve as channels for accessing and transferring externalized knowledge such as, the organization database and supporting software. However, a main problem resides in the accessibility of such channels, since some are limited mainly to the top and middle management. Internalization is considered by the survey respondents as the most important part of the knowledge creating process. It is closely related to the process of learning-by-doing and the reason for its preference by many lies in the fact that many employees of the organization including myself, rely on the information present in the File Server System and in the training programs to process new information and convert

the explicit knowledge into tacit form, enabling us to extrapolate, filter and sequence key information.

The process of converting explicit knowledge into tacit happens much on the individual level. The Product X can be regarded as a product development type where people learn by doing, especially if the analysis is team and not individually based. Product Y is also a product where team members have learned and continue to gain new knowledge as the project progresses. This is visible also from the interviews according which team members certainly gained new knowledge in a specific field as are the machine translation and the terminology based applications. According to the interviews, the difference between the products internalization process resides in the nature of the projects itself. The knowledge present in Product Y requires a much needed review of specific documentation related to application creation and use, while Product X lacks technical documentations of this sort. With this in mind, the internalization conversion seems to occur more in the Product Y development process.

The SECI II process

Sensing is the process of converting not-yet-embodied tacit knowledge into new not-yet-embodied tacit knowledge. Tacit not-yet-embodied knowledge in the target organization can be noticed during informal albeit limited team meetings, where team members socialize and propose ideas to overcome issues. Sensing is similar to the socialization process since both cases deal with tacit-to-tacit knowledge conversion but differs with the inclusion of not-yet-embodied type of tacit knowledge in the process. According to my personal fieldwork observations, there is a tendency in the organization that such type of tacit knowledge tends to develop faster in those individuals who actually experience problems during their work and who have the ability to give valid solutions to such problems. This ability is closely linked with the nature of the team itself which differs from one department (e.g. NPD) to the other (e.g. ICT).

According to the survey results, the sensing process does not seem to be popular in the target organization. One explanation for this lays in the fact that the emergence of new practices from daily-work requires in-depth analysis of the processes involved, and for the majority of the employees this is not possible due to lack of time. Sensing knowledge conversion is clearly visible in the NPD process. The project management nature of these products enables from the start the creation of problems to which solutions follow. A clear example is represented by Product X, the idea of which was sensed by the top management as being a potential winning

bet. Figure 29, shows a graphical representation of the socialization and sensing processes as applied to the target organization and confirms the similarities between these two processes.

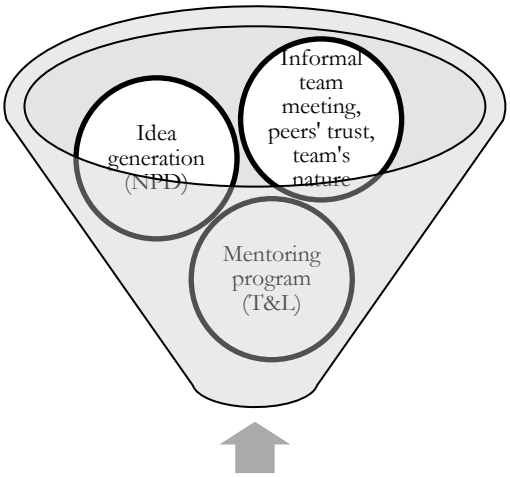

Figure 29. Socialization and Sensing process of KC in the target organization

Externalizing is the process of converting not-yet-embodied tacit knowledge into explicit knowledge. The conversion of not-yet-embodied tacit knowledge is much less visible than the tacit embodied conversion to explicit knowledge. Externalizing is similar to the externalization process since both cases deal with tacit-to-explicit knowledge conversion but differs with the inclusion of not-yet-embodied type of tacit knowledge in the process. The main difficulty lies with the ability to pinpoint the people who already have such knowledge to enable them to create a new product or service. The product development (R&D) and the ICT sector seem to possess such knowledge, since the innovation in the organization is connected to their activity. However, externalizing also enables people to share with each-other the ability to create a product, service or project. Project management and formal team meetings are both key platforms where people share ideas and this is also confirmed by the survey results according to which, this process is the most favorite among the target organization employees.

I would also add the effort of the CAT/DTP team in searching new ways of facilitating their inner process and the cooperation with the project managers. The recently added new request tracking system is a welcoming relief to the process which although clear internally between the CAT/DTP team members, is not so externally for the outsiders such as the project managers and those working in international branches of the organization. As for the Translation and Localization business unit, it is very difficult to pinpoint a particular person who has the ability to make such conversion in the NPD process. The interviews reveal that the main diffi-

culty lies in the fact that the NPD process is team-based and thus, the extrapolation of a single individual who makes the difference in knowledge creation from the rest is almost impossible. Figure 30 shows a graphical representation of the externalization and externalizing processes as applied to the target organization.

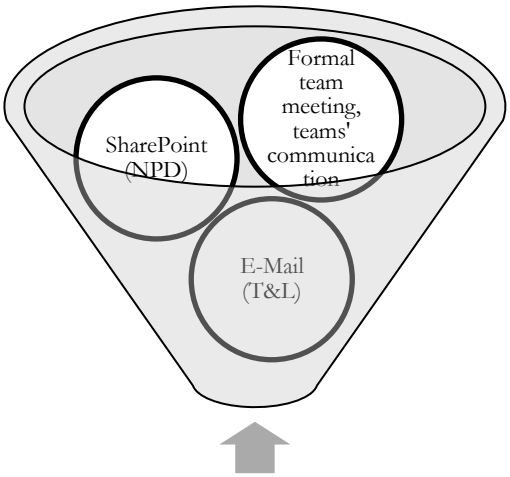

Figure 30. Externalization and Externalizing process of KC in the target organization

Consenting is the process of converting explicit knowledge into explicit knowledge. This process is visible in the target organization due to both inter and intra-team meetings with top management regarding possible implementation of strategies and new potential products brainstorming. Consenting is similar to the combination process, since both cases deal with explicit-to-explicit knowledge conversion. The fact the consenting process is not preferred by any survey respondent confirms the lack of healthy communication between different teams and the top management concerning the NPD process. Consenting is visible in both Product X and Y, since their development is a direct result of intra and inter-team work. The interviews show that the intra-team collaboration is indeed successful and helps put a consensus on the explicit knowledge present in the products development. Figure 31 shows a graphical representation of the combination and consenting processes as applied to the target organization.

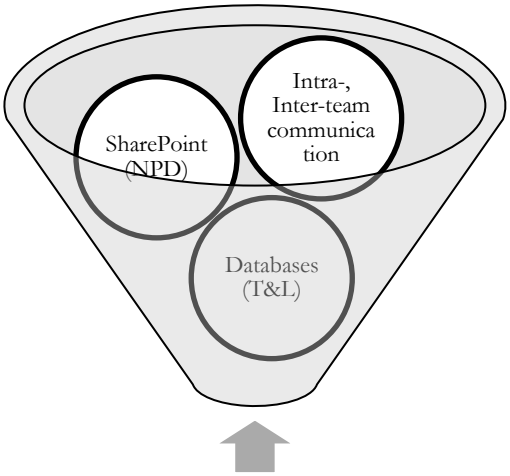

Figure 31. Combination and Consenting process of KC in the target organization

Initiating is the process of converting explicit knowledge into not-yet-embodied knowledge. This process is highly non-visible in the organization, since the conversion of explicit to not-yet-embodied knowledge occurs at an individual level. Initiating is similar to the internalization process, since both cases deal with explicit-to-tacit knowledge conversion but differs with the inclusion of not-yet-embodied type of tacit knowledge in the process. According to my observations, such conversion is hampered by the scattered explicit knowledge already present in the organization and the inability to filter the right knowledge needed to initiate proper action. Only few respondents prefer this process over others of the knowledge creation spiral. The reason for such choice might be the fact this process requires high leadership and management skills which only few employees possess. The development of Product Y in the NPD process is the key space where initiating conversion occurs. The explicit knowledge needed for this project is already present and updated regularly by the team leader, which helps initiate a new knowledge creation cycle. Figure 32 shows a graphical representation of the internalization and initiating processes as applied to the target organization.

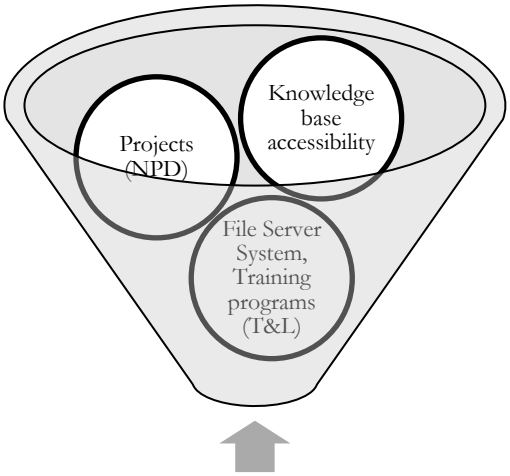

Figure 32. Internalization and Initiating process of KC in the target organization

Ba – the knowledge creation shared context

Originating Ba - this type of context is individual and takes place in a physical space where individuals share face-to-face experiences, feelings, emotions, and mental models. I observed that in the target organization, a typical space of this kind is the work desk as well as informal meetings, especially if the workspace is surrounded by people who know and relate to each-other on a personal level. This type of knowledge creation medium is present in the NPD process, especially in Product Y. The team is located near to each other, as it is the case with the CAT/DTP team, strengthening the bond between team members and knowledge sharing. In contrast, the development of Product X was made by a team whose members are located in different premises of the organization; this makes personal meetings rare and only when formally arranged. According to the interviews, the office premises affect the potential informal meetings between the peers. This is clearly visible in the Product Y team where people often share ideas due to proximity, without the need to arrange a formal meeting.

According to my personal observations, the premises of the organization in the Translation and Localization business unit are organized generally well. However, I have reservations for the ICT team which has been reallocated and placed in the middle of an already established team of project managers, literally cutting it in half. While the presence of ICT personnel is always welcome due to the amount of issues they solve daily, a rearrangement could be beneficial in promoting communication between already known team members. The survey confirms the second choice for this medium among the organization employees. Face-to-face

individual experience sharing is not much promoted due to the tendency of the employees to be conservative and retain rather than share experiences especially during informal meetings.

Dialoguing Ba - this type of context is collective and it takes place in a physical space where individuals share face-to-face mental models and skills and convert them into common terms and articulate them as concepts. Such typical places are the formal meeting and office premises; currently the target organization is expanding the number of meeting offices (four at the moment), in an attempt to generate extra knowledge conversion. To this regard, it is important to point out that there have been changes in the company's premises which have severely affected the knowledge creation process in the target organization. This was caused by a combination of the merger between the former with the current target organization and the recent economic crises both occurring at the same time in autumn 2009 which forced the target organization to reallocate its premises and personnel. The survey results confirm the preference of the majority of the organization employees for this type of medium and confirms the fact much of the personnel relies heavily on formal rather than informal meetings to generate knowledge. According to the interviews, this type of Ba is the most important mean of knowledge sharing in the NPD process. The product development formal meetings serve as the medium for sharing tacit knowledge between team members. These meetings are goal oriented, problem-solving and tend to serve as project milestones and as a communication tool for both informal information and explicit knowledge sharing.

Systemizing Ba – this type of context is collective and takes place in a virtual space where individuals combine their existing knowledge using on-line networks, groupware, documentation, databanks, e-mailing lists and newsgroups. Systemizing Ba is probably one of the most important knowledge conversion spaces used by the organization. The Document Management Platform is an important step forward, while Intranet's use is still limited. The organization's File Server System remains the main virtual space where explicit knowledge is collected, synthesized and retrieved. E-mail messaging is a key knowledge sharing method, although in my view its use for hints and information sharing should be limited, and used sparingly, since due to the daily large volumes, e-mails containing key information and explicit knowledge can be "lost" or easily overlooked. The survey confirms the second preferred choice for this type of knowledge-creating medium, the main reason for this being the heavy reliance of a part of the employees to documented knowledge. This type of collective and virtual knowledge creation medium is crucial in the successful development of new products. Both Product X and Y rely heavily on the Document Management Platform to access and add key product informa-

tion while in contrast to the Translation and Terminology process, the organization's File Server System remains a secondary option for accessing explicit knowledge.

Exercising Ba – this type of context is individual and takes place in a virtual space where the individual embodies explicit knowledge that is present in form of written manuals, electronic documentations and programs. The main exercising Ba in the organization is made of databases such as the tailored Enterprise Resource Planning, the File Servers system, Microsoft Outlook and the new arrival: the Document Management Platform. In my view and according to the survey results, the company file server and folder system is currently too complicated. Many teams inside the organization have different access to the databases and this serves as a deterrent to the equal embodiment of explicit knowledge by the team members, while potential software programs such as the Document Management Platform, which could serve as valid solutions to this problem, are still not available or accessible to all the employees in the organization. The Enterprise Resource Planning (ERP), the main project managing tool at the target organization is used extensively by project managers; however it is limited for the sales personnel. The reverse applies to the Customer Relationship Management (CRM) software, an integrated development platform which helps measuring the developer's productivity. This contradiction certainly does not promote equal accessibility to knowledge for everyone in the organization. The problems related with the documented knowledge are reflected in the survey results as well; in fact, the respondents prefer this knowledge space the least. Figure 33 provides a graphical representation of the Ba configuration at the target organization:

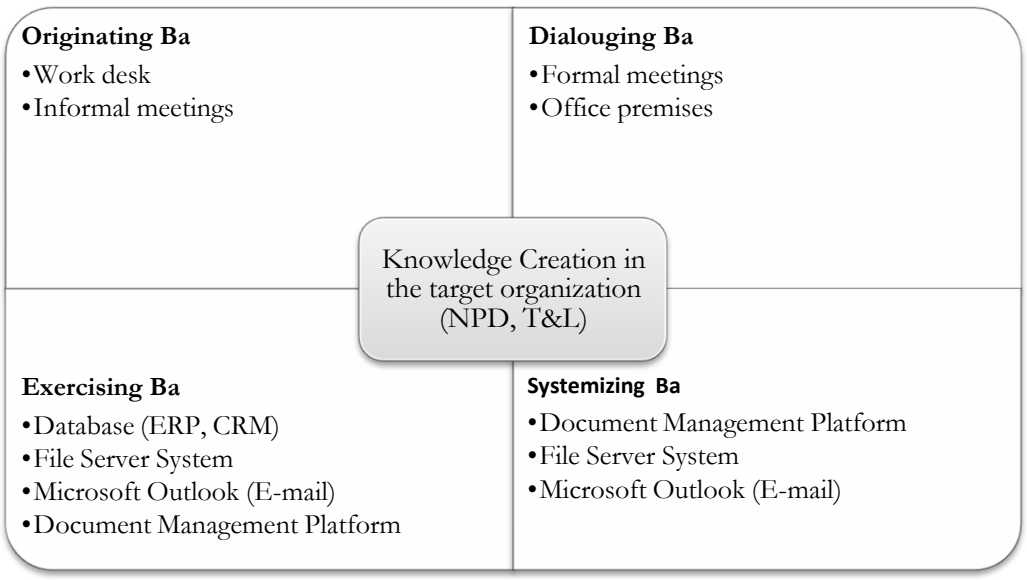

Figure 33. Ba configuration of the T&L business unit and NPD process

This type of knowledge creation medium is less visible in the organization; however in the NPD process, the Document Management Platform and the File Server System are both key mediums in the conversion of explicit to tacit knowledge. An emphasis is being given to the Document Management Platform software due to its easiness of use. This was the case for the Product Y for which information in the File Servers was impossible to find. While it is possible to find Product X explicit knowledge in the File Server System, the emphases is shifting towards the use of the Document Management Platform.

Knowledge Assets

According to my observations and the survey results, the following knowledge assets are present in both Translation and Terminology process as well as in the NPD process:

Experiential knowledge assets are represented by skills and know-how knowledge achieved by work experience. The lack of other types of experiential knowledge assets is derived by the nature of the company and its heritage. While experience is vital to productivity, the survey uncovers a general lack of trust between the organization employees which should be addressed by the top management in due time. Experiential knowledge assets of the NPD process are team-based; product Y development team relies heavily on skills and know-how experience; however the team experiences also physical and energetic knowledge due to the level of trust between the team members and the enthusiasm involved in this project. The Product X development team is less cohesive and relies only on experiential knowledge.

Conceptual knowledge assets are represented by the target organization brand knowledge which is available to both the organization employees and partners. However, the degree of such knowledge asset density varies, with a clear tendency for external rather than internal use, meaning that people involved more with clients such as sales personnel are more prone to posses and use such knowledge than the rest of the employees in the organization. As a result, the T&L business unit certainly suffers from the physical space divisions of the organization. Conceptual knowledge assets are more present in the Product X due to the product development level. In fact, this product is already complete and undergoing product launch, so its explicit knowledge is being forwarded to the potential customer. Product Y is still undergoing testing, so the brand knowledge is not yet captured in explicit form. According to the interviews, this asset is considered the most important in the NPD process due to its relationship with the concept development phase.

Systemic knowledge assets are available in the organization and represented by the File Server System and the Databases. However, the File Server System and the use of multiple databases create difficulties in the use of such assets in the organizations' premises. Systemic knowledge assets are present in both Product X and Y; however, the former is more complete and less technical then the latter due to the nature of the product itself.

Routine knowledge assets are also present in the organization. However, the decentralized nature of the organization and the premises reallocations due to merger and economic crises have made it more difficult the use of knowledge based on the organizational culture and routine practices. The fact this knowledge asset is the most preferred shows the tendency of work in the organization to settle to a routine level. While on one hand this is useful to enable schematic learning, it can have a detrimental effect on the creation of new knowledge and the concept of unlearning old habits and processes. Routine knowledge assets are present in the NPD process, however the organizational routine and culture is more visible in the Product X production than in the Product Y due to the product's own nature. The Product Y team had free hands to the project from the start, which can explain why the know-how routine is more visible than the organizational culture in this product's development. Figure 34 gives a graphical representation of the knowledge assets distribution in the target organization.

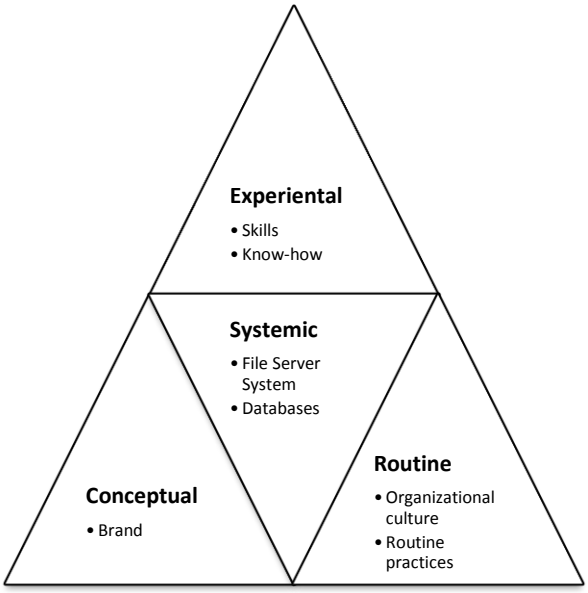

Figure 34. Knowledge assets distribution in the T&L business unit and NPD process

4 Conclusion

This case study aimed at identifying the knowledge creation processes in the target organization with a particular interest at the New Product Development process, as well as identifying potential knowledge sharing issues. The questions addressed by the research were:
Primary question:

- How is knowledge created and shared in the New Product Development process in the target organization?

Secondary questions:

- How is knowledge created and shared in the target organization in general and in the Translation and Localization business unit in particular?
- What are the current issues of knowledge creation and sharing in the target organization?

4.1 Main contributions of the study

Knowledge creation and sharing in the NPD process at the target organization, the main target of this research, bears the features described in the conceptual framework (figure 11) of the literature review. The process is based on the combination of the SECI process, the knowledge sharing context – Ba, and the organizational knowledge assets which are specific for each organization. However, due to the nature of this research with its focus on the NPD process, certain problems arise in the application of the SECI process based on the tacit vs. explicit dichotomy of knowledge.

The research found out that SECI, the process of knowledge creation via conversion from tacit to explicit knowledge cannot be applied successfully in the NPD process without deconstructing the concept of tacit knowledge and analyzing its key constituents, the not-yet embodied tacit knowledge and embodied-tacit which are key ingredients to the development of new products and to the organizational innovation process itself. The original SECI process includes the Socialization, Externalization, Combination and Internalization processes which involve the tacit – explicit - tacit knowledge conversion.

The dichotomy of the tacit knowledge concept ponders the need for the addition of the SECI II process which is based on the shared formation of will and explains knowledge creation and

sharing inside project-based teams, such as in the case of the NPD process in the target organization. The SECI II includes the Sensing, Externalizing, Consenting and Initiating processes which involve the not-yet-embodied-tacit – explicit – not-yet-embodied tacit knowledge conversion. The addition of SECI II and its combination with the original SECI, also named SECI I provide an explanation on the knowledge creation in the NPD process of the target organization for the case study.

The interviews, the survey and my personal fieldwork observations confirm the necessary existence of both SECI I and II, knowledge conversion processes, the four types of Ba for such conversion to take place, as well as the importance of knowledge assets in the target organization. The components of SECI I: Socialization, Externalization, Combination and Internalization are all present in the processes of the Translation & Localization business unit of the target organization in general and in the NPD process in particular. In the knowledge creation process, the SECI I is necessary while SECI II is of equal importance albeit less visible.

In a combined SECI I & II of the NPD process of the T&L business unit, the Socialization and Sensing processes are triggered by informal team meetings, peer's degree of trust and team's specific nature in terms of expertise area. This is shown in the Idea Generation phase of the NPD process and in the Mentoring Program in the T&L business unit of the target organization. The Externalization and Externalizing processes are triggered by the formal team meetings, and the degree of communication in the intra and inter-level of the teams. This is visible in the Document Management Platform as the tool of choice for the externalization of tacit knowledge in the NPD process and the use of E-Mail in the T&L business unit. The Combination and Consenting processes are triggered by inter- and intra-team communication and the visibility of these processes can be seen in the Document Management Platform use in the NPD process and Databases' use in the T&L business unit, both used as primary tools for combining explicit knowledge. The Internalization and Initiating processes are triggered by the need to access the knowledge base which is provided directly by the projects in the case of the NPD process and by the File Server System and various Training Programs in the T&L business unit.

Ba - the shared context of knowledge is present in both the NPD process and the T&L business unit of the target organization, and the teams use the same medium to share knowledge; this is justified by the location of the NPD team in the T&L business unit premises. The SECI

processes needs all four types of Ba (originating, dialoguing, systemizing and exercising) whose presence bears the features present in the given conceptual framework.

The Knowledge Assets (KA) of the target organization are divided into experiential (skills and know-how), systemic (file server system and databases), conceptual (brand) and routine (organizational culture and routine practices). The Knowledge Assets (KA) are deemed variables which apply to different organizations according to their specific industry requirements and organizational culture, hence they are subject to change from one organization to another as seen in the case of the target organization.
The study uncovers also several issues in the process of knowledge creation and sharing in the target organization as described below:

- Knowledge is scattered in many places within the organization
- Knowledge location, availability and status are unclear
- Non-adequate training
- Various unmanaged Intranets available
- Lack of inter-team communication
- Outdated information present
- Too many file servers without equal accessibility
- Knowledge and skills-building is seen as a secondary activity.

4.2 Recommendations

The empirical data gathered and analyzed from the interviews, the survey and my personal fieldwork observations show the need for a clearly defined knowledge creation strategy for the target organization within the T&L business unit which needs to be implemented according to a specific implementation plan. By targeting the T&L business unit, this strategy targets also the NPD process which is embedded in the T&L BU. The reason behind the choice of this strategy relies on the practical aspects of organizational management, with its constant demand for solid real-time solutions, with a time frame limit needed to define resources and visualize results.

4.2.1 The Knowledge Translation (KT) strategy

The strategy plan aiming at addressing the knowledge creation and sharing issue in the target organization is named by me Knowledge Translation for two reasons:

- In addition to other meanings, the word "translation" refers to the mathematical definition according to which, the origin of the coordinate system is moved to another position but the direction of its axis remains the same; in the same way, the Knowledge Translation strategy aims to shift the origin of the target organization's strategy towards a centralized knowledge creation and sharing platform without changing the direction of the already planned and active managerial decisions.
- Translation is directly related to the Translation and Localization business unit which has been the focus of the case study in question.

The strategy is formulated based on the knowledge-related issues that surface in the case study and on the fact that these issues need specific answers formulated in an organized way, so that they would be used by the organization for this research and as a base for future ones. The Knowledge Translation strategy is made of the following parts: Objectives, Planning, Implementation and Rollout.

Objectives

The empirical analysis including the interviews, the survey and fieldwork observations pinpointed many problems in the process of knowledge creation and sharing at the target organization, which have been re-organized and included in the following figure 35.

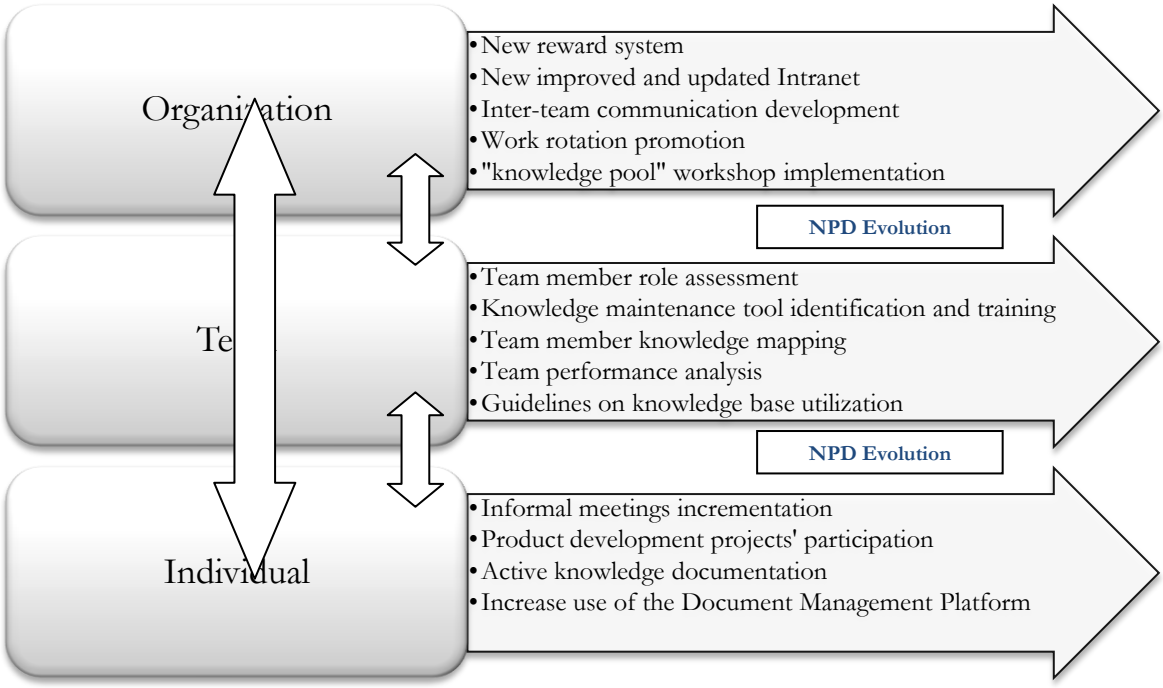

Figure 35. Knowledge Translation strategy objectives

According to the strategy, the objectives are stretched on three main levels: individual, team and organizational. The objectives of the Knowledge Translation (KT) need to run parallel with the target organization delineated strategy to ensure the functionality of the strategy. The main objectives of the KT strategy are to serve as the missing channel between the individual, team and organization communication, as well as to provide the knowledge base and the necessary tools for its creation, transformation and storage in the target organization. The objectives were determined on the basis of the conceptual framework finalized in figure 11 and the study's findings based on the interviews, survey and personal fieldwork observations.

Planning

An action plan should be developed based on the above-mentioned objectives. The Knowledge Translation strategy is a people-centric strategy and focuses on the interactions between intra and inter-teams to provide solutions to knowledge-related issues.

Implementation

The Knowledge Translation Strategy implementation process includes the following phases: Knowledge Pool, Knowledge Identification and Knowledge Translation.

The **Knowledge Pool** phase focuses on sharing knowledge between different parts of the organization. This will be enabled by the presence of workshops organized between various teams of the target organization. The aim is to get to know each-other on an informal level,

brainstorm ideas, identify potential issues and share key knowledge, as well as to bridge the communication gap between various teams. The Knowledge Pool workshops will be of two types: intra and inter-team workshops. During the intra-team workshop, each team assesses its team member's role via team assessments models such as e.g. the Belbin test or similar theoretical team models. This will ensure that each team member feels satisfied in his/her position and ready to contribute to the knowledge sharing process. In addition, the team leader should provide to its peers a detailed analysis of the team's past performance. This will promote trust and increase access to various knowledge types that may be unknown to especially new team members.

The inter-team workshop will focus on inter-team performance analysis. The workshops should be organized once a week and so that each member of one team is placed together with the member of another, thus forming a new cluster or so-called knowledge group. A typical knowledge pool of this kind can be obtained by the participation of a translators' team, project manager's team, R&D team, sales personnel and a knowledge management consultant in the workshop. The presence of the knowledge management consultant serves as a buffer to any possible inter-team frictions during the joined panel discussion. The teams need not be complete but a minimum of three people per each team is required for the workshop to be operative. The timetable for the Knowledge Pool phase should be not more than six months. The deliverables for this phase include: team member role assessment, teams performance analysis completion and intra and inter-team knowledge groups setup creation.

In the **Knowledge Identification** phase, once the knowledge groups within the inter-team clusters are identified and the knowledge "pool" created, continued communication is needed to filter the knowledge by identifying the knowledge concepts and their application in the Translation & Localization Industry and in the specific business unit. The main objective of this stage is to identify the business processes of the target organization, the business unit, and the knowledge base present in them after which, the mapping of team member's knowledge should follow. The mapping will pinpoint the areas where the team member needs more training and where he/she can add more value to the business unit and team. Once the lack of individual knowledge expertise for a process is identified, a training plan will be created and implemented according to a specific timetable. Each team member and team itself should start documenting their knowledge in explicit form. The deadline for the Knowledge Identification phase completion should be six months; the decision for such choice was taken after considering the fact that top management is keen to see factual results of the implemented strategy

within a reasonable timetable. The deliverables of this phase include: knowledge base identification, knowledge creation and sharing tools identification, and tools usability training.

Once the knowledge base and tools for specific processes are identified and training has been provided to the designated teams' members, the last phase of the strategy, known as **Knowledge Translation** can begin. The deliverables of the Knowledge Translation phase include full access and usability of the Document Management Platform by each team member, the individual knowledge documentation by its users, as well as participation in various product development projects by all team members. The success of the strategy will depend on other factors, including a fully improved and developed Intranet, as well as a centralized File Server System with enabled customized search function. Figure 36 provides the graphical representation of the Knowledge Translation strategy implementation.

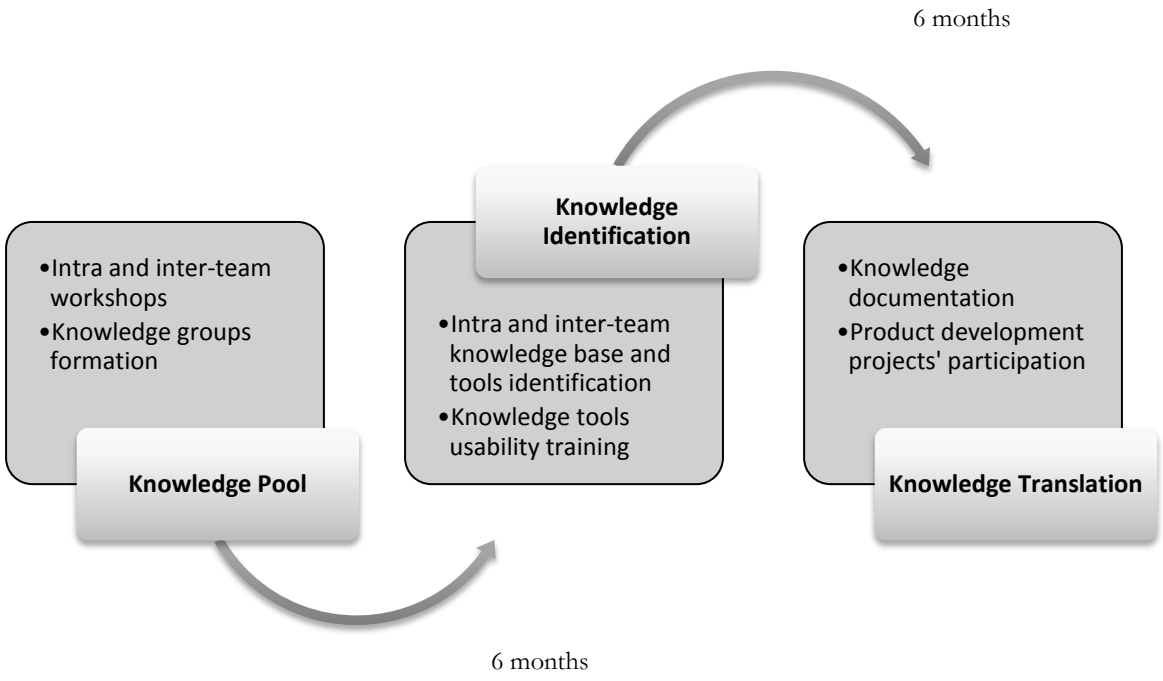

Figure 36. Knowledge Translation strategy implementation phases in the T&L business unit

Rollout

The final rollout process includes the monitoring of the implementation strategy, specific guidelines to knowledge users, a defined and centralized knowledge archiving and validation process, as well as continuous mapping of team and individual knowledge. This process does not have a specific deadline, since knowledge creation and sharing is an ongoing process which continuously adds value to the organization as seen in figure 37. To ensure that the rollout process is successful, the target organization should also provide the team members

with a specific rewarding system to boost motivation and thus knowledge sharing. In addition, work rotation should actively be promoted by the top management in the inter-team level, such as the project manager teams.

Figure 37. The Knowledge Translation Rollout process in the T&L business unit

I strongly believe the Knowledge Translation strategy would be very helpful to the target organization in resolving the knowledge-related issues which were uncovered by this study. The lack of extra resources enables the strategy to be very competitive and run in parallel with other strategic implementations of the organization. One key ingredient needed is certainly the motivation of each employee to enter this new type of "translation" challenge and I do believe this is possible, not only because it would benefit the organization's development but first and foremost it will serve as a platform for the individual's own professional development which will serve him/her in future whether in this or another industry.

4.3 Validity and reliability

Once the results are visible, every researcher has to pose to himself a question after the completion of the study; did he answer the questions posed in the introduction chapter? This question formulates the validity concept which serves as the testing module for the proposed conceptual framework. The validity of this study can be analyzed from two perspectives, internally and externally. The internal validity is provided by the qualitative research with the interviewees' selection criteria based on their area of expertise, preferring those who possessed

key information about the NPD process. After a careful selection for the interviews the only possibility left unexplored was to interview more people; however, this would have not necessarily meant better results since more data analysis filtering is needed in that case thus complicating the research method. In fact, I dually supported both the interviews and the survey as complementary tools in yielding the presented results.

The external validity involves the level of generalization and the fact whether this study can be extrapolated and inserted in other groups of interest, such as other business units of the target organization. This is certainly an interesting prospect and results could be different especially considering the fact that my study was focused on a BU which had co-lived for a long period alongside the target organization as a separate company. The major threat to the validity of this research is its reliability, and this is translated in the continuous innovations that are occurring as we speak in the target organization. Several knowledge creation and sharing issues surfaced by this study are already finding feasible answers, including the improvement of existing Ba within The target organization. Another important observation is the reaction of the majority of employees to the concept of knowledge; many confuse the concept of knowledge with the concept of information and although care was taken to explain and treat these concepts separately, I cannot help to think that there are a percentage of the survey respondents who actually confused the terms.

Another problem arises by the research timing; if this study would have been conducted in a later period, perhaps after one year, differences would have been noticeable, though doubtfully impacting highly on top management's decision-making agenda. However, in the light of the results presented in this study, the need for the Knowledge Translation strategy is an ever-present constant which should co-exist in the equation of the target organization's innovation process. Furthermore, the results are amplified by a solid core conceptual framework based on the literature review and supported by a vast schematized empirical part which helps the reader understand the reasoning behind the conceptual framework and the Knowledge Translation strategy choice. Last but not least, it should be noted that the conceptual framework would differ had I not been part of the organization's workforce but rather an external researcher, in this sense, the research is biased by my fieldwork experience, however this double-edged sword provided me with specific insights on the case organization's culture that an external researcher would lack.

4.4 Further research

As presented in the precedent chapters, the quest for the understanding of knowledge-related process is an ongoing one, especially in innovative environments such as the target organization. Personally, I find that this organization needs a deeper understanding of the Knowledge Management cycle as it happens in the organization with several factors affecting the overall process including knowledge creation and sharing in other business units of this organization and knowledge co-creation through customer and strategic alliance relationships.

Since the conceptual framework model is proposed and the Knowledge Translation strategy delineated, the natural first step would be to test whether the Knowledge Translation strategy is feasible for the Translation and Localization business unit and in the same time undertake the project of identifying knowledge-related processes and uncover their issues in other BU's of the organization. The testing of the Knowledge Translation strategy is vital in modifying and improving the conceptual framework for the target organization and other potentially interested organizations. Once the Knowledge Translation strategy is successfully applied and its outcome becomes visible, new steps should be undertaken in strengthening the knowledge base of both individuals and teams inside the target organization as well as promote inter- and intra-team communication throughout the organization.

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Appendices

Appendix 1: Questionnaire

QUESTIONNAIRE FOR KNOWLEDGE CREATION AND KNOWLEDGE SHARING IN THE TARGET ORGANIZATION

Name : _____

Title : _____ Location _____

- Please put an X mark in the appropriate box wherever required. It is recommended to mark only one box and if necessary, mark no more than 2 boxes for each question.

Terms' explanation

- Knowledge – The expertise, and skills acquired by you through work experience and education
- Explicit knowledge – knowledge expressed in form of words, numbers, codes found in documented form
- Tacit knowledge - Unwritten, unspoken knowledge held by everyone, based on his or her emotions, experiences, insights, intuition, observations and internalized information
- Knowledge creation – Formation of new ideas through interactions between explicit and tacit knowledge
- Knowledge sharing – the process of knowledge sharing within the organization
- Ba – the medium/space where knowledge is shared (face-to-face/ physical interaction, web-based, e-mail/ virtual interaction)
- Knowledge asset - the input, output, and moderator of the knowledge creation process

1. In your view, what is the current situation of knowledge creation and sharing in the target organization?

a) Not present . [ ]
b) Satisfactory [ ]
c) Good [ ]
d) Excellent [ ]

Your personal comments:

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2. Does the target organization recognize knowledge creation and sharing as a part of their key processes?

a) Yes [ ]
b) No [ ]
c) Cannot say [ ]

Your personal comments:

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3. Which of the following best describes the target organization organizational culture on knowledge creation and sharing?

a) Their key values focus on sharing of knowledge [ ]
b) They have an receptive and supportive culture [ ]
c) They think knowledge creation and sharing is everyone's commitment [ ]
d) They do not support knowledge creation and sharing [ ]
e) If any other, please specify _____

Your personal comments:

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4. What are the current knowledge-related challenges in the target organization?

a) Lack of information [ ]
b) Information overabundance [ ]
c) Lack of a clear strategy [ ]
d) Loss of valid knowledge due to a key employee leaving the organization [ ]
e) Poor sharing of knowledge within the organization [ ]
f) Lack of time [ ]
g) If any other, please specify _____

Your personal comments:

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5. What is the most important form of knowledge in the target organization?

a) Documented/written (explicit) knowledge [ ]

b) The ability to develop a product/service or project (tacit embodied) [ ]

c) The ability to create a product/service or project (tacit not-yet-embodied) [ ]

Your personal comments:

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6. What do you think of the documented (explicit) knowledge in the target organization?

a) It is very important, but time-consuming [ ]

b) It is quite important, relevant but not updated often [ ]

c) It is not so important; I gain key knowledge via team meetings and training [ ]

Your personal comments:

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7. What do you think of the non-documented (tacit) knowledge in the target organization?

a) It is very important, but underestimated [ ]

b) It is quite important but difficult to understand [ ]

c) It is not so important; I gain the knowledge via various written documentations [ ]

Your personal comments:

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8. Which one of the following types of non-documented (tacit) knowledge is the most important in the target organization?

a) Organizational culture, shared understanding and relationships (encultured/ know-how tacit knowledge) [ ]
b) Shared norms, taken for-granted routines and interactions (embedded/ architectural tacit knowledge) [ ]
c) Know-why, system understanding and reference methodology (system understanding/ know-why tacit knowledge) [ ]

Your personal comments:

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9. How would you describe the knowledge creation process in the target organization?

a) It is related only to the R&D department [ ]
b) Everyone contributes to it [ ]
c) Top management is interested but could support it more [ ]
d) It is part of the organizational culture [ ]
e) If any other, please specify _____

Your personal comments:

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10. Which one of the following parts of the knowledge creation process is most important for you?

a) Socialization (apprenticeships, informal social meetings) [ ]
b) Externalization (concept creation and quality control) [ ]
c) Combination (breaking down corporate vision and product concepts into operational business units) [ ]
d) Internalization (similar to learning-by-doing) [ ]
e) Sensing (sensing emergent possibilities from day-to-day work practices) [ ]
f) Externalizing (sharing with others the ability to create a product/ service or project) [ ]
g) Consenting (approval regarding an emergent common work practice / reality) [ ]

h) Initiating (taking the lead by initiating action on an issue/challenge) [ ]

Your personal comments:

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11. What is the most important knowledge-creating medium (Ba) in the target organization?

a) Face-to-face individual experience sharing (Originating Ba) [ ]

b) Face-to-face collective/ team experience sharing (Dialoguing Ba) [ ]

c) Collective combination of documented knowledge (Systemizing Ba) [ ]

d) Individual embodiment of documented knowledge (Exercising Ba) [ ]

Your personal comments:

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12. Which is the most important type of knowledge asset (KA) present in the target organization?

a) Care, trust, enthusiasm, improvisation (experiential knowledge) [ ]

b) Information on the target organization as a brand, product concepts and designs (conceptual knowledge) [ ]

c) Technologies, documented information (systemizing knowledge) [ ]

d) Know-how, organizational routine and culture (routine knowledge) [ ]

Your personal comments:

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13. In your view, what is the attitude of the top management regarding knowledge creation and sharing in the target organization?

a) Sees it as very important and provides full support [ ]

b) Sees it as very important but hardly supports it [ ]

c) Sees it as not very important but could support it [ ]

d) I do not know, but a clear strategy on this issue should be provided [ ]

Your personal comments:

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14. Does the target organization actively create and support knowledge sharing in their organization?

a) Yes [ ]
b) No [ ]
c) Cannot say [ ]

Your personal comments:

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15. Which one is the biggest barrier in knowledge creation and sharing in the target organization?

a) Language barrier [ ]
b) Lack of participation in decision-making [ ]
c) Unwillingness to share knowledge [ ]
d) Lack of trust, belief and motivation [ ]
e) Knowledge sharing is not a part of routine daily work [ ]
f) Lack of training [ ]
g) Lack of rewards/ recognition for knowledge sharing [ ]
h) If any other, please specify _____

Your personal comments:

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16. What are the problems faced by the target organization in creating and sharing knowledge?

a) Lack of proper training [ ]
b) Company's database is too scattered and complicated [ ]
c) Lack of dedication within each team [ ]

d) Lack of time to learn [ ]

e) Inter and intra-team communication issues [ ]

f) Technical issues [ ]

g) If any other, please specify _____

Your personal comments:

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17. What is the biggest problem in implementing knowledge creation and sharing processes in the target organization?

a) People tend to keep rather than share knowledge [ ]

b) Lack of understanding of knowledge-related processes . [ ]

c) Lack of trust and motivation [ ]

d) Lack of resources [ ]

e) Lack of management commitment in promoting knowledge [ ]

f) Technological restrictions [ ]

g) Attracting & retaining experienced people [ ]

h) If any other, please specify_____

Your personal comments:

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18. If the knowledge that the target organization provides you is somewhat insufficient, kindly indicate the causes of this problem.

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19. Kindly indicate what can you do to improve the knowledge creation and sharing in the target organization.

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20. Kindly indicate the steps, which the target organization should take in order to improve the knowledge creation and sharing.

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Appendix 2: Interview questions

Study name: Knowledge creation and sharing in the New Product Development process in the target organization

Date:

Time:

Interviewer: Elio Shijaku

Interviewee: Designated employees of the target organization

1. Can you please describe your duties in the target organization?
2. How long Product X and Product Y have been in development?
3. How would you describe the feasibility of these products?
4. How was the idea for these products generated and how their concept developed?
5. What do you think is the most important stage of the product development process?

a. Idea Generation
b. Concept Development
c. Technical Development
d. Product Launch
e. Please elaborate.

6. Did you encounter any problems during these products development and if yes, what were they?
7. Who were the people involved in the development of Product X and Product Y and how were they chosen for this task?
8. How would you define the performance of the people involved in these products' development and what were the issues that they faced?
9. What do you think were the main factors that pushed the target organization in developing these products?
10. What is the primary problem these products solve, and the primary benefit they provide?
11. Is the information on these products easily available in documented form?
12. What has been done to improve the accessibility of such documented knowledge within the target organization?
13. Who are the primary target customers for these products?
14. What are the products' strengths and weaknesses?
15. What are the products' threats and opportunities?
16. In your view, what is lacking in the overall product development process in the target organization?

17. How do you think knowledge on new product development is shared in the target organization?
18. In your view, what are the factors that improve and worsen knowledge creation and sharing in the product development process in the target organization?

a. Improving factors
b. Worsening factors

19. If you had the possibility to change something in the target organization and in the product development what would it be?

a. Change in the target organization
b. Change in the product development

20. Are you satisfied with your work in this organization and how could contribute more for the target organization?