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UTILIZING THE INNOVATION COMMUNITY IN INTERNATIONAL BUSINESS

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D.Sc. (Econ.&Bus.Adm.) Marita Rautiainen

ABSTRACT

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Utilizing the innovation community in the international business

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Keywords: Innovation community, community of professionals, virtual team

In globally operated technology, companies have people working close to the customer and together with them. Clearly these professional people should also be a part of companies' innovation network. This potential for expertise is not always exploited comprehensively by companies. One reason is that the research of the topic has been carried out in a slightly narrow-minded manner from the direction of the researcher's own discipline only. Therefore, there is a clear demand for research that is more extensive, connecting different disciplines of science and bringing the results of studies to a practical level.

A hypothesis of this study was that combining different theories and models around the selected theme is possible and together they can provide a better starting point for the activities of global expert groups. The research strategy is to implement the research section of the study as a qualitative case study by following the methodology of constructive research. That has been made by combining traditional theories and models such as knowledge, innovation, and exchange with the business of the company and its demands. A practical innovation community tool was developed with this combined information. This tool includes ten important key areas and 152 factors in total, which have some effects for virtual innovation communities.

The tool was also tested and approved for implementation with thematic interviews within a globally operating target company. Although the tool has been developed for globally or at least internationally operating companies, it can be seen feasible also for other internationally acting teams or communities of professionals, which will face similar challenges with different cultures and other related topics.

TIIVISTELMÄ

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Yrittäjyys

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Innovaatioyhteisön hyödyntäminen kansainvälisessä liiketoiminnassa

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Globaalisti toimivissa teknologiayrityksissä on aina henkilöitä, jotka työskentelevät läheisessä yhteistyössä asiakkaiden kanssa. On selvää, että nämä asiantuntijat tulee huomioida osana yrityksen innovaatioverkostoa. Tätä potentiaalia yritykset eivät aina hyödynnä kattavasti. Yhtenä syynä tähän on, että aihealuetta käsittelevät tutkimukset on toteutettu hieman kapeakatseisesti, vain tutkijan oman tieteenalan näkökulmasta. Tilanteesta johtuen on selkeä tarve laajemmalle tutkimukselle, joka yhdistää eri tieteenalat ja tuo tutkimustulokset käytännön tasolle.

Tässä tutkimuksessa on oletettu, että aihealueeseen liittyvien teorioiden ja mallien yhdistäminen on mahdollista ja että yhdessä ne tarjoavat paremman lähtökohdan maailmanlaajuisten asiantuntijaryhmien toiminnalle. Tutkimusstrategiana on ollut toteuttaa työ laadullisena tapaustutkimuksena ja konstruktiivisen tutkimuksen menetelmää noudattaen. Tämä on toteutettu yhdistämällä perinteisiä teorioita ja malleja, kuten osaamis-, innovaatio- ja vaihdantateoriat, yrityksen liiketoimintaan ja sen liiketoiminnan vaatimuksiin. Yhdistetyn tiedon avulla on kehitetty käytännöllinen innovaatioyhteisötyökalu, joka koostuu kymmenestä tärkeästä avainalueesta ja yhteensä 152 tekijästä, joilla on vaikutusta virtuaalisiin asiantuntijayhteisöihin.

Työkalua testattiin kohdeyrityksessä toteutetuilla teemahaastatteluilla ja se havaittiin soveltuvaksi globaalisti toimivan yrityksen käyttöön. Siitä huolimatta, että työkalu on kehitetty maailmanlaajuisesti tai kansainvälisesti toimiville yrityksille, se on hyödynnettävissä myös muille, useissa maissa toimiville ryhmille tai asiantuntijayhteisöille, jotka kohtaavat vastaavia haasteita eri kulttuurien ja muiden aiheeseen liittyvien tekijöiden kanssa.

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This thesis has been a fascinating journey to the world of innovation communities, where the needs and goals of companies meet different cultures and people. Working with very different individuals in teams, groups of professionals or communities of multinational companies has been a challenging topic to be fully explored, but in all its diversity it has also been an inspiring and broadening experience.

This work would not have been created without the unfailing support of my family. First of all, I would like to thank my wife, Tuula, for all the encouragement and support she has given me from the beginning of my studies and especially during this work. She has sustained the positivity and has ensured that I have had the opportunity to focus on the work. Similarly, I would like to thank my daughters Anniina and Pauliina, who have assisted with the finishing of the work.

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Hollola, June 13, 2019
Jari Sorvisto

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1 INTRODUCTION

Globalization and the global economy has caused suffering in some areas of traditional industry but at the same time it has given people and many companies more possibilities for wide networking and development. Knowledge, currency and goods flow freely between people and countries. We can learn from each other and develop ourselves as humans, technology as a facilitator and our society keeping everything in order. The development of technology has been quick and this development is based on people, professionals of their own fields. Globally operated companies have always people working close to the local customers and together with them. Those who work in sales, engineering, manufacturing and finally in the customer site, support their customers to reach their targets. Naturally these people have a deep knowledge of customer needs which is required in their work but also when creating new innovations and developing existing products to the next level. It is clear that these professional people should also be a part of companies' innovation network.

The guiding principle of this study is to develop the target company's practice so that the expertise of those who are globally ranked and working close to the customer can be utilized more effectively and equitably in development work, and so that the totality can be controlled and navigated to a direction that has been mutually agreed. This is be made by developing a practical tool for the company for the evaluation of its virtual teams or with more modern term communities of professionals or innovation communities. This study approaches virtual community planning, building, working methods, guiding and connecting to other organizations by combining traditional theories of knowledge, innovation, team and team exchange as well as influences of different cultures with the business of the company and its demands. The most important factors have been selected from that theoretical background, their influences on the virtual innovation community are evaluated and finally the actual tool with necessary actions, and valuation possibility is formed and presented.

1.1 Background and motivation of the study

Traditionally, there are two principles of developing new products in companies. The first, widely used principle is centralized development in one specific location or a few locations called a product home or homes that highlight control and require clear operational structures. Secondly, there are some pioneering companies in some technological areas, for example in information technology, with a more open and efficient development culture that is based on a network of professionals, the teams that work like a global community and are able to develop new innovations together without any fixed locations or structures.

In global business, those who work in companies' sales units and operate close to the customer are, regardless of technology, more conscious of their customers' needs and their local conditions than the product home professionals who work in one location. For this reason, the sales units have better chances for effective brainstorming with the customer compared to the product homes, and in some cases also for development work that requires piloting. Together with company development, this increases the expertise of sales units and evolves the specialists of the market area and its requirements, who also have the potential to take part in more advanced development projects. This potential for expertise is not always exploited comprehensively, for example, by companies that supply traditional machinery and systems for the processing industry.

The potential should not be considered only as taking part in development work. Through the growth of expertise, the responsibility of some product development and product data control can be transferred to the sales units in its entirety. Naturally, this causes a notable change in the practice responsibilities and duties of the product home but also considerably changes its identity, which will have to evolve from an authoritative position to a more strongly directive role. Additionally, companies face problems with long distances, different times, communication difficulties and cultural differences. The described operating model that might be new for the traditionally formed companies and based on a global presence is

inevitably at least partly virtual, and therefore in this respect also changes existing methods and possibly organizational structures. In its entirety, the described operating model causes complexity to the organization that is difficult to control, which is why deep understanding of the subject and careful planning of the operation is important.

The goal of the target company and its service business is to broaden its organization of professionals to a global scale so that the development work could be carried out better while taking the customers' needs and local requirements into consideration. This should be put into practice so that the best experts of the selected professionalisms such as sales, project management, engineering and site operation, who work in different locations, are engaged in the planning and implementation of the development work. This should be carried out in a manner that is controlled and suitable for the company's goals, which requires developing the correct kinds of methods and tools. After the presented stage of development is reached, product responsibilities and control are possible to transfer to those locations as well.

1.2 Research gap

The area of emphasis and reason of the growth of technology-oriented companies is often the development of deep knowledge of their own industry's individual features. A problem is formed with globalization by a fragmenting expertise and its control (Sivunen 2007, p. 14). Generally, international and often virtual teamwork has been studied quite lightly compared to traditional teamwork that happens face to face (Berry 2011, p. 202). In studies of virtual teamwork, within global communities of professionals the focus has mainly been on exploiting existing technology, management, cultural differences and to some degree communication, the role of the individual, the life cycle of the team and different team types (for example Sivunen 2007, p. 16; Gibbs, Sivunen & Boyraz 2017, p. 590-599). The research has been carried out in a slightly narrow-minded manner from the direction of the researcher's own discipline only and with emphasis on the recognition of the current state of this relatively young phenomenon. Therefore, in the current study

it is hypothesized that combining different theories and models around the selected theme can provide better starting points for the activities of global expert groups. Furthermore, it is expected that when applied to the practical level, this new model will also improve the usability of already known research results.

Applying the results of studies around this theme in technological companies is laborious at the moment. Making use of the results more extensively would require having personnel in the company, whose tasks would be quite far from the company's actual business. These kinds of resources are rarely in hand. The areas of emphasis for personnel working in operative positions are elsewhere, namely in the solving of practical challenges and the management of operation in accordance with processes. In process development of work, the focus is on making use of the company's own expertise and, for example, the fulfilment of quality standards. Due to the situation, it is quite understandable that the results of studies related to virtual work are only exploited partly or not at all in technological companies. Therefore, there is a clear demand for research that is more extensive, connecting different disciplines of science and bringing the results of studies to a practical level.

1.3 Objectives and scope of the study

In accordance with presented hypothesis, this study approaches virtual community building, working methods, guiding and connecting to other organizations by combining traditional theories of knowledge, innovation, and exchange with the business of the company and its demands. It is assumed that with this combined information, it is possible to build a strong and efficient community. On a practical level, the aim of this study is to develop a practical tool for global companies for when they are planning their virtual community of professionals.

The study is limited to cover the companies that have at least international, or in more complicated situations global operations, and which are operating in the industry of technology. Because of the broad theme, the theoretical part of the study is constructed covering only notably important areas of it. Those areas have been

selected according to the background and objectives of the study and are also carefully justified in this chapter. The selected main literature and theories of the study are widely recognized but they are additionally supported by latest surveys and models, which have been seen necessary for creating applicable solutions that can follow, for example, latest development of technology.

Thereby, the main objective of the present study is to find an answer to the following question: ”What kind of community of professionals, based on a global presence and their method of operation, is suited for the international and multicultural business?” This study looks for an answer to the previously mentioned research question by approaching the building of a virtual community of professionals, its operation, working methods and connection to the rest of the organization with a wider outlook than before. Thus, a structure and a mode of operation is sought for the virtual team or community, which needs to be formed in line with multinational and multicultural employees working in the team and not the other way around. This is a new form of approach, especially in the global process supplier environment.

Considering the goal of the study, the task is approached, and the network of professionals and its methods are evaluated based on the following sub questions that determine the study:

1. Which factors affect the assembly of the global community of professionals?
2. What kinds of working methods should be defined for the global community of professionals?
3. How should the global community of professionals be controlled?

The previously mentioned questions are essential when building a community of professionals which is suitable for the company, considers the characteristics of global business and is capable for distributed and virtual work and internal co-operation. When controlling the collection of new information and the process of

producing new knowledge, requirements of those tasks should be known on both personal and company level. These requirements should be kept in mind also when determining the working methods of the company's communities of professionals. When discussing the requirements of the global network, it should be clarified which are the factors found through theories that connect people working in different continents that contribute to groupwork, and how to control and utilize the team members' cultural differences and different areas of expertise. Naturally, the evaluation and development of the network's operation cannot simply be done in the light of available research. Taking note of the company's current operating models is essential in finding executable answers. When producing and utilizing the knowledge generated in the community of professionals, it is also necessary to determine the principles of controlling and sharing the created information.

The company's business and existing practices strongly determine the execution of the new operating models. Harmonizing of previous theories and the practices that are characteristic to the company therefore leads to detailed choices and solutions, which creates challenges when applying the results of the study to the other companies. In forming an initial solution for the problem as well as in research and choosing the final solution it is therefore also important to consider the applicable form of the solution. In a large scale, the chosen method of approach will in any case give guidance to how the subject can be studied, and which factors should be considered. In addition, the study combines different theories as well as the company's practices, which concretizes the utilization of theoretical information for the reader and through this raises the importance of research work when determining the strategic alignments and actions of the company.

1.4 Methodology

The character of the planned study is constructive and the problem's initial solution (construction, in this case the tool for virtual community planning and operating) is built based on theories, earlier studies and the company's current operating models. The research strategy is to implement the study's research section as a qualitative

case study by following the methodology of constructive research (Chart 1). Based on theoretical background information and the company's current state as one example, a drafted model of the tool is evaluated through the methods of a qualitative study with thematic interviews. Based on the interviews, factors that affect the solution's final form are sought.

The study is made challenging for its part by the fact that the researcher's and company's expectations and the company's current modes of operation can affect the preparation of the tool, its development and its analysis. For this reason, constructing theory and seeking arguments from a theoretical direction have a high significance to the quality of the study.

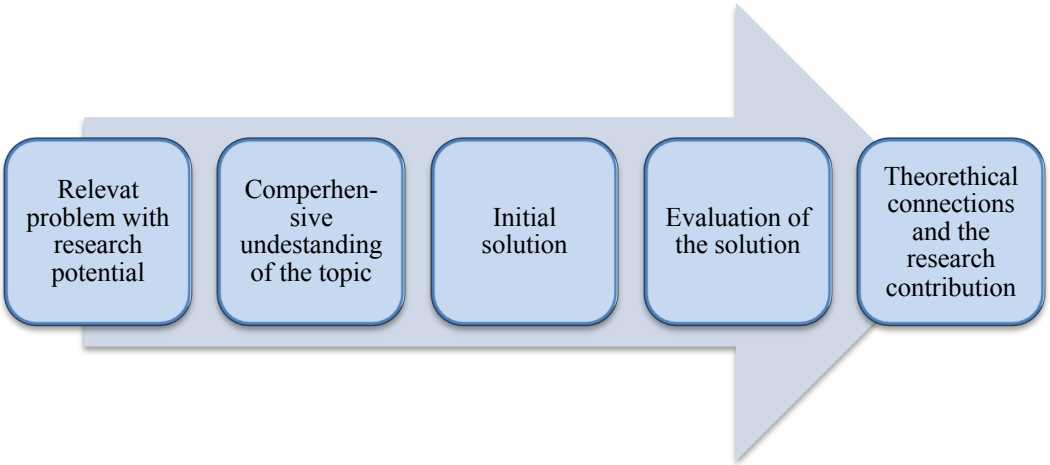

Chart 1. The stages of constructive study (Adapted from Kasanen, Lukka & Siitonen 1993).

1.5 Structure of the study

This study consists of nine chapters. Together they form a path from introductions to final conclusions. Chapter 1 presents an introduction to the theme of innovation communities as well as a short description of the study itself. After this has been described, background and motivation for the study are more detailed. Next, the gap of the researched area is explained and with that information, the main objective

for the study is described. This is presented as a form of research question and three sub questions. At the end of the chapter, the constructive methodology that is followed during the work is described.

The theoretical part of the study consists of chapters 2 and 3. Chapter 2 includes the theoretical background of the study. This has been built by using widely recognized theories and literature, which are supported by the latest surveys and models. This chapter includes details of information, knowledge, team and company specific theories and models. Community of practice is presented relatively broadly in chapter 3. This is seen as necessary due to the model including many of the features that have been planned to be a part of the theoretical background.

Chapters 4, 5 and 6 together form the section where the application has been built. Chapter 4 presents a target company as an example of existing innovation structure, as well as expectations from its regions for the future operating model. Based on the theoretical background and the company's expectations, the most important key areas are defined, corresponded factors are collected and their relation explained in chapter 5. In chapter 6, the actual tool for innovation community planning and developing is developed and presented.

The evaluation of the selected approach by using thematic interviews is explained and its implementation presented in chapter 7. The chapter includes sections for interview planning, implementing, evaluating and analyzing. Chapter 8 collects the findings of the study. It includes a short description, main findings, theoretical and practical implications, limitations and the validity of the study as well as recommendations for future research. Finally, chapter 9 presents a summary of the whole study.

2 DETERMINANTS OF PROFESSIONAL NETWORKS

Earlier studies and literature on the subject define the background theory of the study, which is divided into five identified areas. Those five areas have been selected according to the background and objectives of the study and they cover related areas around the topic, which have been considered as important. Based on these, the theoretical framework supporting the construction of the work is built. This section describes the five following areas:

1. Information, knowledge and knowledge development
2. Knowledge management
3. Team development, efficiency and exchange
4. Virtual team and its unique features
5. Operational and structural requirements from the company

2.1 Information, knowledge and knowledge development

In various disciplines such as sociology, economics and management, it is well understood that information-based knowledge and the development of the entire organization's expertise play an important role in companies (Davenport, De Long & Beers 1998, p. 43). In year 1934, Schumpeter suggested that the acquisition of new knowledge is essential for discovering new opportunities, while Kirzner concluded that the use of existing knowledge is more relevant (Table 1). Although these theories are widely recognized, current research suggests that both definitions can occur simultaneously (Shane 2003, p. 19-21).

Table 1. Schumpeterian versus Kirznerian opportunities (Shane 2003, p. 21).

Schumpeterian opportunities	**Kirznerian opportunities**
Disequilibrating (surprising) Requires new information Very innovative Rare Involves creation	Equilibrating (unsurprising Does not require new information) Less innovative Common Limited to discovery

Peter Drucker (1985, p. 67-68) has accordingly noted that a large amount of the potential is in fact the result of structured work, either from the companies themselves and the industry's area of the company, or alternatively from social and intellectual networks outside them. According to Drucker, the first mentioned opportunities are caused by surprising events, incompatibility, process needs or industrial and market changes. Alternatively, sources of external potential may include demographic changes, changes of knowledge and new skills.

The development based on existing knowledge produces know-how whose effects are foreseeable and positive and, as a result, companies tend to rely more strongly on existing knowledge in their development work. However, development work based only on existing knowledge has a negative impact on the increase of the organization’s know-how and efficiency, as well as reducing the company's competitiveness. For this reason, the company must also systematically build on new knowledge. (March 1991, p. 85) Producing new knowledge is a human process and it requires flexible structures within the company and the right kind of motivational atmosphere (Davenport, De Long & Beers 1998, p. 56). An organization that is healthy is able to exploit both new and existing knowledge by using its own experiences, values and practices and based on those, develop and deploy new know-how (Davenport & Prusak 1998, p. 52, Nonaka, Toyama & Konno 2000, p. 5-7). In knowledge-intensive companies, it is difficult to determine the real profit from

development investments, which require consideration of the choice of customers, the range of products and the definition of development priorities (Starbuck 1992, p. 736-737).

Human knowledge builds on so-called explicit (or public) information that can be presented, for example in text or numerical form, and so-called tacit knowledge based on action, commitment, and participation (Nonaka 1994, p. 16). In the background of this theory of Nonaka, among others, are the conclusions of Polanyi (1966, p. 24), according to which tacit knowledge is always part of the decision-making process of the individual so that it guides and forecasts finding a solution. In this case, the individual has deep knowledge of the matter, he knows how to act in familiar situations, but he cannot fully explain why he acts as he does (Ryle, 2009, p. ix).

The knowledge of the individual can be categorized according to the nature of the knowledge into four groups and out of these groups, the tacit knowledge based ones are experiential and routine-based knowledge, whereas the explicit knowledge based ones are conceptual and systemic knowledge (Nonaka, Toyama & Konnon 2000, p. 20-21). This classification is presented in Table 2. Spender (1996, p. 51-52), in his own model, groups tacit and explicit knowledge according to its ownership held by individual or community, which point out hidden information in the community's policies, guidelines and culture. This is, according to Spender, safer and also more strategically important for the company (Table 3). Blackler (1995, p. 1029) bases his own categorizing of expertise on previous research, firstly on whether it is a solution to the familiar or unknown problems of the company and, secondly, whether the expertise is based on the efforts of individuals or on the Community's investments. This categorizing presented in Table 4 rises from the individual level to illustrate how the importance of knowledge is reflected at the organizational level.

Table 2. Classification of the knowledge of individuals (Nonaka et al., 2000, p. 20).

Experimental knowledge assets Tacit knowledge shared through common experiences - Skills and know-how of individuals - Care, love, trust, and security - Energy, passion, and tension	**Conceptual knowledge assets** Explicit knowledge articulated through images, symbols, and language - Product concepts - Design - Brand equity
Routine knowledge assets Tacit knowledge routinised and embedded in actions and practices - Know-how in daily operations - Organizational routines - Organizational culture	**Systemic knowledge assets** Systemized and packaged explicit knowledge - Documents, specifications, manuals - Database - Patents and licenses

Table 3. Classification of the knowledge by ownership (Spender 1996, p. 52).

	Individual	**Social**
Explicit	Conscious	Objectified
Implicit	Automatic	Collective

Table 4. Classification of the knowledge of organization (Adapted from Blackler 1995, p. 1030).

	Focus on familiar problems	**Focus on novel problems**
Emphasis on collective endeavor	**Knowledge-Routinized organizations:** Emphasis on knowledge embedded in technologies rules and procedures	**Communication-Intensive organizations:** Emphasis on encultured knowledge and collective understanding
Emphasis on contributions of key individuals	**Expert-Dependent organizations:** Emphasis on the embodied competences of key members	**Symbolic-Analyst-Dependent organizations:** Emphasis on the embrained skills of key members

Based on his classification, Nonaka (1994, p. 18) suggests that knowledge can be developed in four ways, where open information adopted by an individual turns into routines of individuals, which can also be described and taught to others, and then combined at an individual level into more comprehensive knowledge. These models of knowledge development and a clockwise progress are described in Table 5. Respectively, Spender (1996, p. 59) presents in his own study that knowledge development occurs when different areas of expertise interact with each other and that this is only possible if the importance of the knowledge is identified in the company and it is flexible while developing the knowledge. Blackler (1995, p. 1042) continues to expand the discussion so that besides the knowledge of individuals and flexibility of organizations, one must also consider what kind of expertise a company has in general and how it is managed in an individual-minded way.

Table 5. Modes of the knowledge creation (Nonaka 1994, p. 19).

		To	
		Tacit knowledge	Explicit knowledge
From	Tacit knowledge	Socialization	Externalization
	Explicit knowledge	Internalization	Combination

In addition to types of knowledge described above, which the individual has acquired through practical experience, different goals, and, for example, theoretical knowledge, he also has metacognitive knowledge, such as knowledge of his or her own competence and knowledge of others (Flavell 1979, p. 906). At the organizational level and under the right conditions, new knowledge and know-how are created in a broader process of individual competence, shared tacit knowledge, knowledge or competence development, verification, iteration, and transfer of the results to the entire organization (Nonaka 1994, p. 27). With more concretely, for example in product development projects, the core of this development process is often

described as a so-called funnel model, where a large amount of ideas are collected in a fuzzy early part and can be developed further on by cutting, analyzing and iterating to the final solution (Leppälä 2014, p. 166).

2.2 Knowledge management

In the activity of a learning-capable organization described in the previous chapter, five areas of expertise can be identified: ability to self-management, ability to questioning, sharing the common goals, learning together, and seeing how things affect each other (Senge 1994). Creating a shared vision, solutions, and practices are at their best in a process that takes into account all the necessary perspectives. They are working to achieve a common and practical goal, acting according to the rules of the group itself, committing participants in different ways, pushing challenge to the current state, and supporting innovative thinking, exploiting various types of high quality information and ensuring its meaning as well as agreeing on a common vision only after careful investigation and notification of things and perspectives. (Innes & Booher 1999, p. 419-421) The company's ability to absorb new knowledge depends on the ability of its employees to absorb and implement external and internal information between different units (Cohen & Levinthal 1990, p. 131-132).

The transfer of know-how to another organization is part of the company's competence development process in accordance with the previously presented Nonaka model. In this context, Rogers (1983, p. 10-22) describes in his Diffusion of innovations -theory the ways how new ideas spread within the community. He presents four essential elements: innovation, communication channels, time and social system. In his model, awareness of new types of innovations spreads through the network by using different channels of communication, within the time required by the processes. In the Rogers model, people are also categorized into five groups according to their innovativeness or adaption capacity: innovators, early adopters, early majority, late majority, and laggards. The transfer of knowledge and know-how within a company is, of course, dependent on the recipient's ability to absorb

knowledge, people's ability to understand the causal relationships as well as the co-operation between the information provider and recipient (Szulanski 1996, p. 37). The transfer of tacit knowledge rather than guidance and training should recommend apprenticeship, practical experience, direct interaction and networking (Haldin-Herrgard 2000, p. 5; Davenport & Prusak 1998, p. 90).

When moving from creation, adoption and transfer of knowledge to the management of knowledge, the knowledge transfer model of Nonaka can be further developed in accordance with Table 6, paying more attention to the identification, sharing and related actions (Kiviranta 2010, p. 172). The most important aspect of organizing and managing information in an organization is to make it available and usable in a way which serves the company goals. That helps to reach the goals in an appropriate, well organized and distributed way (Davenport & Prusak 1998, p. 68-69).

Table 6. Managing tacit knowledge (Kiviranta 2010, p. 173).

Tacit knowledge → Explicit knowledge

Identification and recognition What, necessary and important, who have, to whom?	**Making it visible** Words, concepts, stories, images, descriptions, designs, systems
Internalization Adoption, practicing and consolidating into thinking and action	**Sharing and transferring** Different ways of sharing and moving

In the companies operating in a global and highly competitive environment, data processing systems play an essential role in the development of products or services and in the management of know-how (Alavi & Leidner, 2001, p. 132). In such companies, data processing systems provide flexibility, several different ways for communication and change management tools for sharing knowledge (Pan & Leidner 2003, p. 81-83). Table 7 shows the roles of data processing systems in different data management processes.

Table 7. Knowledge management processes and the potential role of IT (Alavi & Leidner, 2001, p. 125).

Knowledge management processes	Knowledge creation	Knowledge storage/retrieval	Knowledge transfer	Knowledge application
Supporting information technologies	Data mining Learning tools	Electronic bulletin boards Knowledge repositories Databases	Electronic bulletin boards Discussion forums Knowledge directories	Expert systems Workflow systems
IT enables	Combining new sources of knowledge Just in time learning	Support of individual and organizational memory Inter-group knowledge access	More extensive internal network More communica-tion channels available Faster access to knowledge sources	Knowledge can be applied in many locations More rapid application of new knowledge through workflow automation
Platform technologies	Groupware and communication technologies			
	Intranets			

2.3 Team development, efficiency and exchange

The working group and team can be separated from each other in terms of concepts, with the group having a clear leader and often the same goals as the organization to which it belongs. In the teams, leadership is more shared and has a specific task, defined only for that team. (Katzenbach & Smith 2005, p. 164) The workgroup or team is defined as a part of the organization with at least two members, has a defined task and a common goal within the workgroup or team, its members interact, and the tasks are common, it controls the interfaces in relation to the organization, and it works within the organization with other parts of the organization (Kozlowski & Bell 2001, p. 6). The effectiveness of the workgroup is defined by the organization where it works and the group's characteristics and operating methods along with the goals set by the organization (Sundström, De Meuse & Futrell 1990, p. 121-122). Elements of working group efficiency according to Sundström et al. are described

in more detail in figure 1. The workgroup is built from individual level to a group work level in four phases: team formation, task compilation, role compilation and team compilation (Kozlowski & Bell 2013, p. 26). The process presented by Kozlowski & Bell is described in Figure 2.

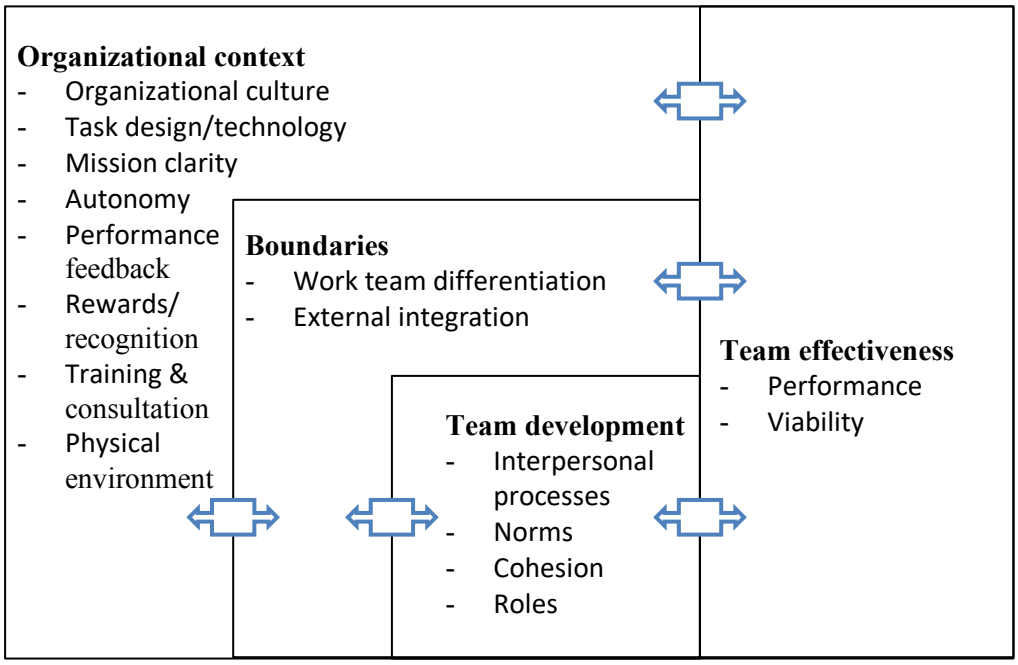

Figure 1. Effectiveness as consisting of performance and viability (Sundström et al. 1990, p. 122).

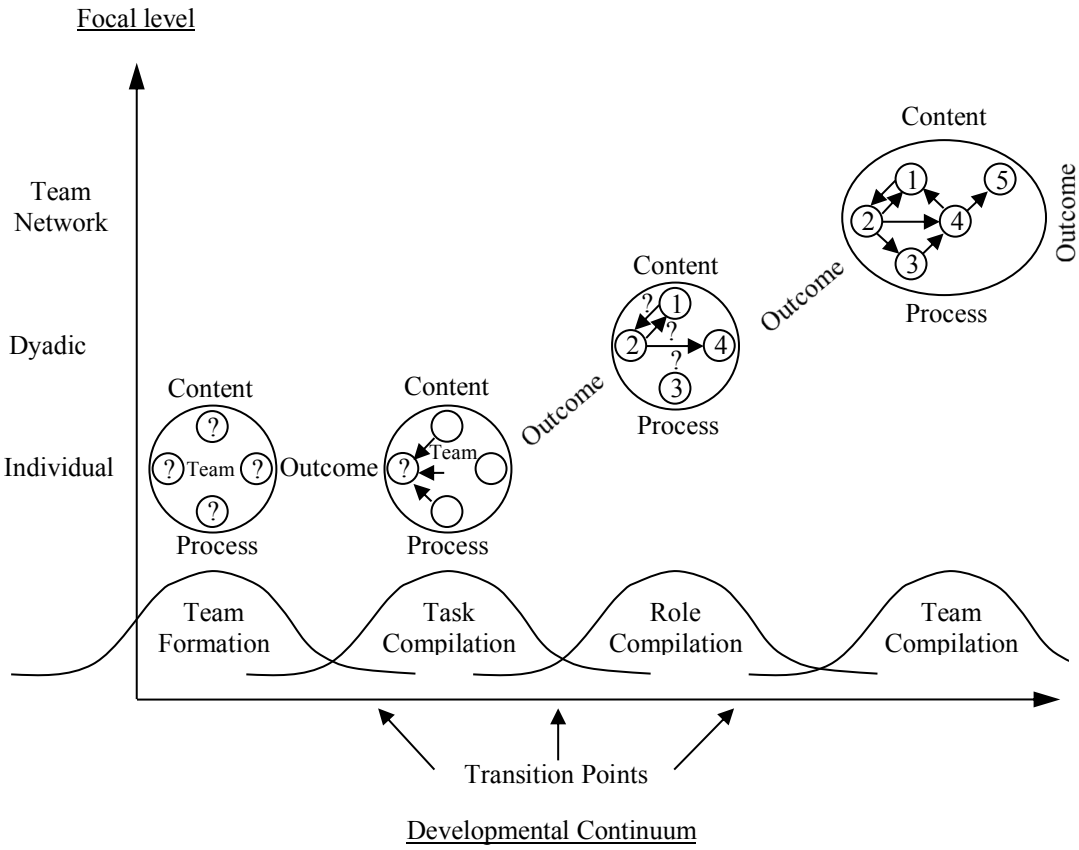

Figure 2. Team development and performance compilation (Kozlowski & Bell 2013, p. 107).

A person's behavior in a group can be based on the exchange theory of Homans (1958, p. 606). According to him, the exchange object can be both material and non-material, such as appreciation. This exchange tends to achieve a balance so that the provider expects to receive something valuable from recipient and the recipient also has the pressure to give something equal to the provider. Homans concludes that this exchange and balance is the basis of different groups in which we operate. However, it is good to note that if the power of a member of a group or a part of it is high in relation to other members of the group, more power may require benefit from others with low reciprocity or even without reciprocity (Gouldner 1960, p. 163). For this reason, the exchange requires that the group has rules in its operations which will create the necessary internal trust over time (Cropanzano & Mitchell

2005, p. 875). There are six objects of exchange: love, position, information, money, goods and services (Foa & Foa 2012, p. 16). Emerson (1976, p. 357) raises the exchange in broader contexts, where the exchange takes place on a commodity produced by the group, for example by means of information or even more extensive exchange networks. In a company, the exchange will take place at various levels (the employee has an exchange between an organization, a manager and a team). The organizational means of exchange can be, for example, support, security, promotion, salary, benefits, employment, social role, work tasks and knowledge. The employee's means of exchange can be communality, efficiency, participation, membership, loyalty and positive attitude (Cole, Schaninger Jr & Harris 2002, p. 147-148).

Holistically, the team's expertise is more than a sum of its members' expertise. However, according to Stasser & Titus (1985, p. 1476), in its decision-making, the group strives to choose the most popular solution, even if the significant tacit knowledge held by an individual member or members would be shared in advance with the group members and shared information should have had a clear impact on the decision. In addition, the group members' personal or task related goals define with whom and what information the member wants to share, which partly defines team members' co-operation, the effectiveness of the members, and the quality of the decisions of the whole group (Wittenbaum, Hollingshead & Botero 2004, p. 304). The quality of decision-making in a group can be influenced by working methods. When working in a group, the face-to-face approach takes the available information into account more effectively in its decision-making process and ends up with better solutions compared to virtual work with the help of a computer. Similarly, the information asymmetry within the group can be compensated for by working in such a way that different solution alternatives are valued and processed in a rational manner. (Hollingshead 1996, p. 192) Lu, Yuan & McLeod's (2012, p. 69) meta-analysis of research of the subject highlights the raising of tacit knowledge as early as possible in the group's decision-making process, its sharing across the group, and the presentation of information during the discussion, allowing it to improve quality of decision-making in the group.

2.4 Virtual team and its unique features

Geographically and / or within the organization, internally decentralized employees, who are collected to perform a specific task by using the latest computer technologies and rarely meeting face-to-face, are called virtual teams (Townsend, DeMarie & Hendrickson 1998, p. 18). Due to long distances, cultural differences, time differences, and handling of large amounts of data, managing virtual teams is more complicated than managing traditional teams (Berry 2011, p. 200).

When developing collaboration between virtual teams, good communication (whatever the type) plays a crucial role. Good cooperation and strong consensus are important for both performance of the team and for individual development. Communication must be clear and simple. When developing a team, it would be a good idea to guide the work so that the tasks require the creation of work pairs and provide the team with the possibility of face-to-face grouping in addition to remote communication. (Hart & McLeod 2003, p. 358-360; Zigurs 2003, p. 348; Berry 2011, p. 202) In distributed teams, both asynchronous and synchronous technological tools are used that have different content-related and interaction-related functions (Sivunen 2007, p. 152, 166-167). The functions of the communication tools in distributed teams are shown in Table 8.

Table 8. Functions of the communication tools in distributed teams (Sivunen 2007, p. 168).

	Function	**Communication tool**
Content of interaction	Communication	E-mail Discussion forum Conference call Video conference
	Presenting and answering the questions	E-mail Telephone Discussion forum Instant messaging
	Decision making	Discussion forum Conference call Video conference
	Rational communication	Instant messaging
Interaction characteristics	Different timing of interaction	E-mail
	Same timing of interaction	Telephone Conference call Video conference
	Saving interaction	E-mail Discussion forum
	Speed of interaction	Telephone Instant messaging
	Presenting things	Video conference Virtual meeting

Other important areas in addition to communication are demographic, psychographic and behavioral variables. In this way culture and its manifestations influence what we do and how we behave, also in virtual teams. The following classic joke opens this setting quite well:

" In Britain everything is permitted except that which is forbidden;
In Germany everything is forbidden except that which is permitted;
And in France everything is permitted, even that which is forbidden."

(Hofstede 2001, p. 375).

In a group, demographic factors affect the way the group works, so that the work of the homogenous group is generally more stable, and the work of the heterogeneous group is more challenging, especially in the early stages of group work (Chatman & Flynn 2001, p. 970). Culture affects the group members' personality, how they express themselves, how they think, speak, solve problems, etc. One way to categorize cultures is the concept of time and space, Western Anglo-Saxon monochronic and Latin, Mediterranean and Russian polychronic timing. Where monochronic culture emphasizes schedules, division and accuracy, polychronic culture is more people oriented, flexible and targets the completion of operations. (Hall 1989, p. 16-17) Another wider perspective for cultural differences specifically from an organizational point of view is presented by Geert Hofstede. He measured four organizational differences of each cultural area. The first one is people's multilevel equality, which he named "power distance", the second is the attitude in how to handle future uncertainty, the third is a basic organization type and the fourth is a thinkable organization model. Table 9 shows how different areas or countries can be divided according to these four dimensions. The cultural dimensions of United States are more in the middle where the power distance is larger than in Anglo-German countries, uncertainty avoidance is stronger than in Anglo countries and in China, and a divisional organization type is fairly common (Hofstede 2001, p. 87, 151, 376).

Table 9. Cultural dimensions of organization in different countries/areas (Hofstede 2001, p. 377).

Small power distance Weak uncertainty avoidance Countries: Anglo, Scandinavian, Netherlands Organization type: implicitly structured Implicit model of organization: market	Large power distance Weak uncertainty avoidance Countries: China, India Organization type: personnel bureaucracy Implicit model of organization: family
Small power distance Strong uncertainty avoidance Countries: German-speaking, Finland, Israel Organization type: flow bureaucracy Implicit model of organization: well-oiled machine	Large power distance Strong uncertainty avoidance Countries: Latin, Mediterranean, Islamic, Japan, some other Asian Organization type: full bureaucracy Implicit model of organization: pyramid

As a result of globalization, the above heterogeneous multicultural work communities bring their own characteristics and challenges to companies, but also provide a competitive advantage, for example, in the following areas: cost reduction, resource acquisition, marketing, innovation, problem solving, organizational flexibility and social responsibility (Cox & Blake 1991, p. 45) . In group work, Asian, African and Latin cultural backgrounds appear to be more collaborative and thus more capable of problem solving than those with Anglo-Saxon cultural backgrounds, but on the other hand, groups with Anglo-Saxon backgrounds are more willing to cooperate than people with other ethnic backgrounds (Cox, Lobel & McLeod 1991, p. 839-840).

2.5 Company strategy, structure and innovation network

The aim of the strategy is being different by selecting suitable activities for unique offering (Porter 1996, p. 64). A traditional company strategy includes three areas; firstly, the company sets internally reasonable goals. Secondly, the goals are set according to company's strengths, weaknesses, opportunities and threats. Thirdly,

the company`s success is based on its unique competences (Porter 1991, p. 96-97). Strategy is one part of the logical process, which starts from the company mission and is developed further to individual tasks (Kaplan & Norton 2001, p. 72). The strategic process of a company is presented in figure 3.

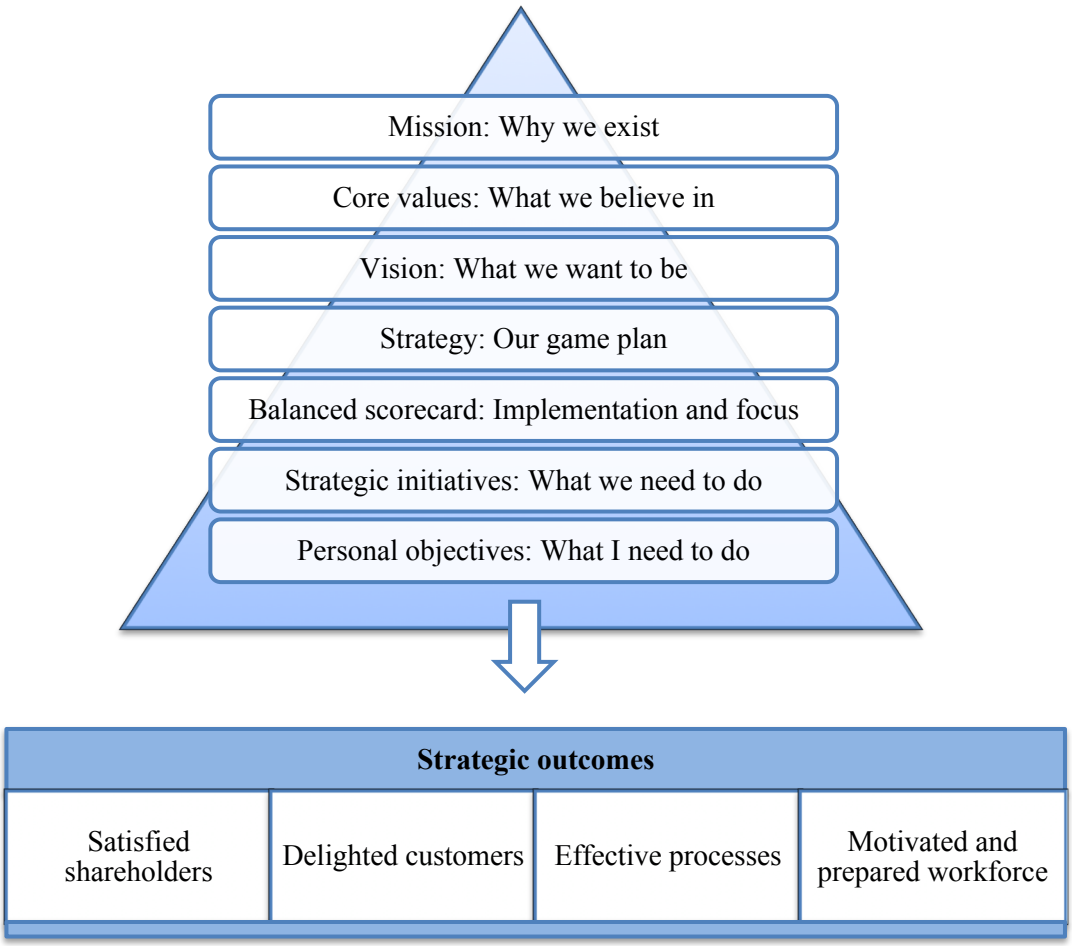

Figure 3. Strategic process of the company (Kaplan & Norton 2001, p. 73).

A global company is easily targeting global strategy and synergy in its global operations. But it is not the only way to proceed. Large global companies can also build their operations according to local needs and sometimes that kind of tailoring is demanded for successful business. (Daft 2010, p. 186-187) Four normal types of organizations for international business are presented in figure 4.

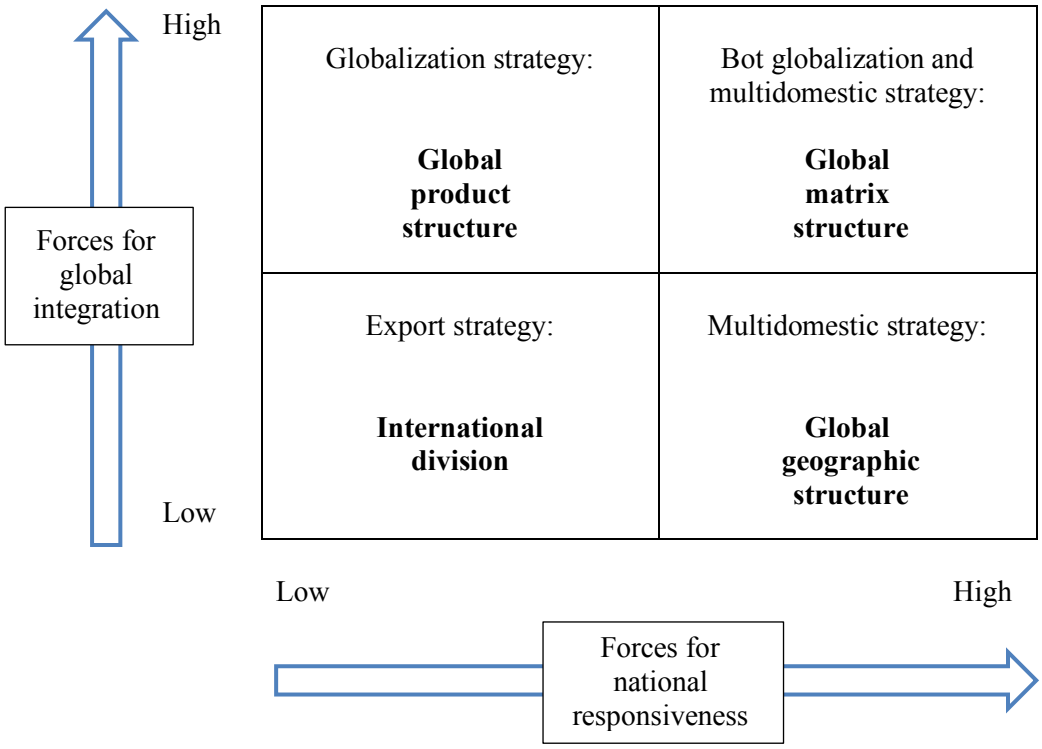

Figure 4. Organization structures in international business (Daft 2010, p. 187).

An Organization needs information and knowledge and a company collects that asset by scanning, searching and monitoring its internal and external environment (Huber 1991, p. 97). In larger companies, knowledge creation and developing takes place simultaneously at many different levels: at an individual level by using creativity, at a department level by working out new products or services as well as at a corporate level by executing developing projects of future products or services (Von Krogh, Nonaka & Ichijo 1997, p. 477). Moreover, it is good to keep in mind that access to the knowledge of other units will increase the innovativeness of all of the development units, simply because it enables shared learning (Tsai 2001, p. 1002). A Company network includes many actors, who are important to information sharing and knowledge creation (Ritter, & Gemünden 2003, p. 746). The innovation partners that might be included in a company's network and their valuable contributions to the company are presented in figure 5.

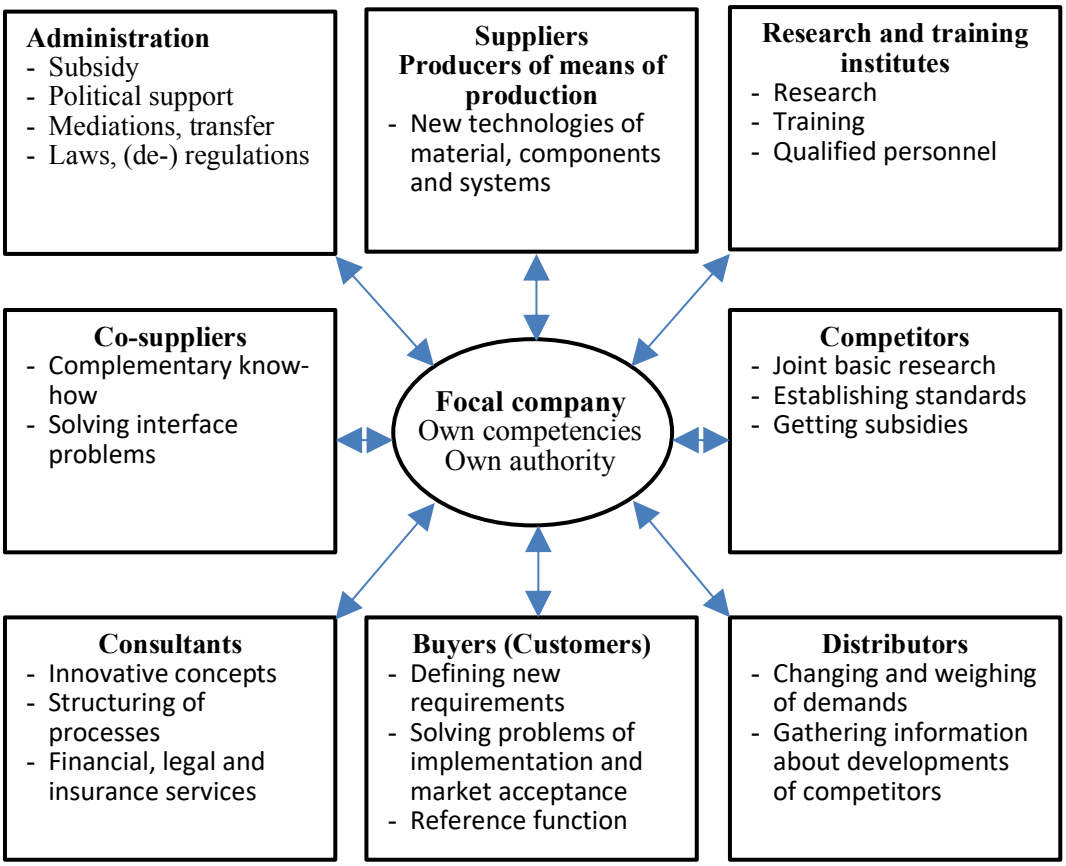

Figure 5. Company innovation partners and their contributions (Gemünden, Ritter & Heydebreck 1996, p. 450).

The cooperation in the company innovation network is difficult when it includes actors from different backgrounds and knowledge base (Parjanen, Harmaakorpi & Frantsi 2010, p. 2). In that case, it is the distance between knowledge source and knowledge need that creates the complexity for the innovation process, but at the same time it has innovation potential as well (Konsti-Laakso, Pihkala & Kraus 2012, p. 93-96). Identified distances in innovation networks and their innovation potentials are collected in table 10.

Table 10. Distances in innovation networks (Konsti-Laakso, Pihkala & Kraus 2012, p. 97).

Distance	Source	Innovation potential
1. Geographic	Physical distance between actors	Geographic proximity does not automatically lead to innovations, although it may, for instance, facilitate social proximity
2. Cognitive	Differences in ways of thinking and knowledge bases	A certain degree of cognitive distance enables the creation of new innovations
3. Communicative	Differences in concepts and professional languages	When making a new idea understandable, concepts from other fields or sciences, for instance, may be utilized
4. Organizational	Differences in ways of coordinating the knowledge possessed by organizations and individuals	An organization should have both strong and weak links in its network
5. Functional	Differences in expertise in different industries or clusters	It is useful to obtain novel information from outside one's own field of operations as well. In such cases, the information often needs to be adapted to the field of operations in question
6. Cultural	Differences in (organizational) cultures, values, etc.	The challenge is to get people who work in different organizational cultures to collaborate
7. Social	Social relationship and the amount of trust included in them	Innovations require interaction among different kind of actors. Trust helps in the creation of radical ideas
8. Temporal	Differences in ability to imagine possible, potential futures	The challenge in to acquire and assimilate future-oriented knowledge so that it can be exploited in a proactive manner

3 PRESENTATION OF COMMUNITY OF PRACTICE

This chapter presents one model of the ways in which to formulate and develop a community of professionals. That model is known as “Community of practice”. The model already includes many team and virtual community factors, which are important in efficient teamwork. Its special features include being relatively open and having the commitment of its members as its main driver. The model is carefully evaluated as one option of how to organize the community of professionals.

3.1 Background of the community of practice

Although organizations are guiding the working of their employees in many ways, in reality, the ways in which employees work are significantly different from how they are supposed to operate (Brown & Duguid 1991, p. 40; Orr 1996, p. 1). Of course, there are many influential factors in this background, such as the exchange theory and cultural differences previously presented, but in addition, other factors also influence a person's actions. As a part of the organization, an employee defines his or her own identity through the group he or she belongs to in the work community and adjusts his or her own activities to the group's practices also focusing to strengthen the group's sense of community and interaction (Ashforth & Mael 1989, p. 34-35). Membership of such a communal group is not a reason for the individual to participate in performing a particular task or for having a training, instead, it is a part of a person's identity, knowledge and social fellowship, which in itself generates knowledge (Lave & Wenger 1991, p. 53). In order to make work, innovation and learning more effective, the company must seek to reduce the difference between supposed and actual practices by providing sufficient freedom for those working in the field, but at the same time providing information to the outside of community (Brown & Duguid 1991, p. 53-55). Such a group working on a common theme, which members share a common interest, problem, or passion, and who work together to increase their expertise in their field, is called a community of practice (Wenger, McDermott & Snyder 2002, p. 4).

Modern knowledge-based organizations build their activities on a variety of well-defined expert groups, which are often quite effective in their assigned tasks. Communities of practice complement these existing structures and enhance knowledge sharing and learning. These communities work informally together and share experiences regularly or irregularly with the aim of resolving the challenges in a creative way. (Wenger & Snyder 2000, p. 139-140) The goals, members and members' reasons to belong to the group differ from other more commonly known working groups. Table 11 illustrates what differences between different groups can be identified. According to Wenger (1998, p. 2), the community of practice defines itself as a joint project with members committed to sharing common practices.

Communities of practice exist in all organizations and they can reach across organizational structures and levels. They can work within the organization and handle emerging issues within a group that have the information needed for proper solutions. On the other hand, the community of practice can also act as a handler for decentralized knowledge and skills of different business units. At its widest, the community of practice can act over corporate interfaces, whereby, for example, knowledge needed to develop technology in a similar activity of different companies can be more controlled. (Wenger 1998, p. 3-4)

Table 11. Comparison of characteristics of different groups (Wenger & Snyder 2000, p. 142).

	What's the purpose?	Who belongs?	What holds it together?	How long does it last?
Community of practice	To develop members' capabilities; to build and exchange knowledge	Members who select themselves	Passion, commitment, and identification with the group's expertise	As long as there is interest in maintaining the group
Formal work group	To deliver a product or service	Everyone who reports to the group's manager	Job requirements and common goals	Until the next reorganization
Project team	To accomplish a specified task	Employees assigned by senior management	The project's milestones and goals	Until the project has been completed
Informal network	To collect and pass on business information	Friends and business acquaintances	Mutual needs	As long as people have a reason to connect

3.2 Building and developing the community of practice

The communities of practice develop and sometimes go through major changes throughout their life cycle. They typically start as a less important network that has some potential to play a more important role in the future. As a community, the network gradually evolves as a result of the cooperation of its members and grows with the new members associated with it, and with the members providing their expertise to the community. At a later stage, the community of practices' activity varies, during that time the community actively develops its skills and practices. The community can reach the end of its life cycle simply because its task is completed. Community members can sometimes make friends, and its focus turns out from the original. Communities of practice can also merge, divide or transform into a part of the organization. (Wenger et al. 2002, p. 68, 109-110) Figure 6 shows the developmental stages of the community of practice, as well as its degree of energy and in that way the visibility to the organization.

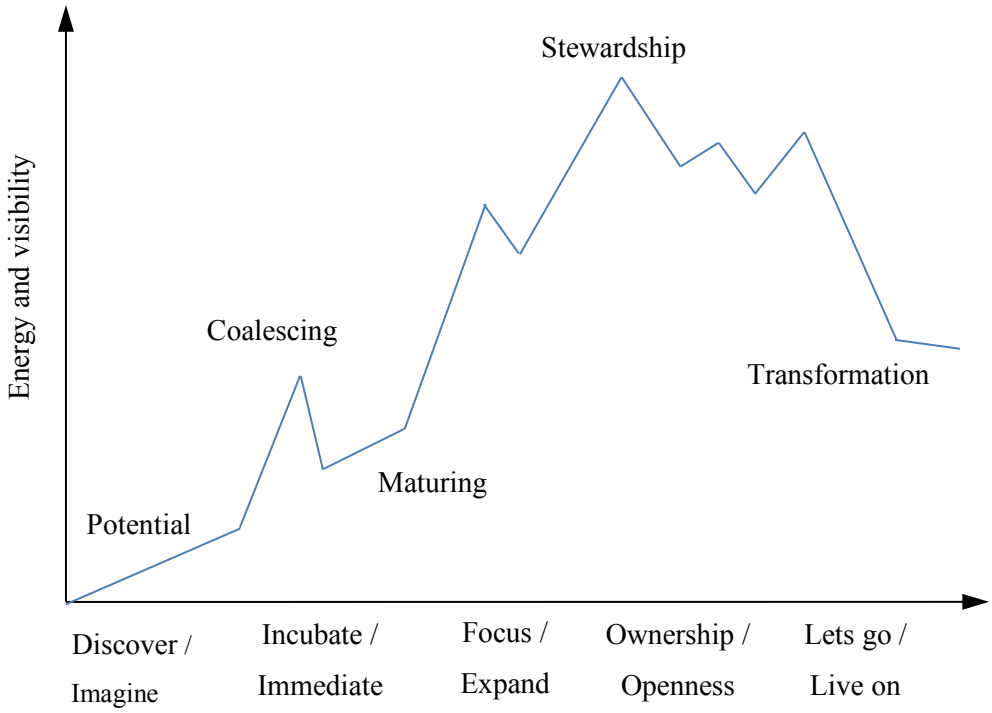

Figure 6. Development of the community of practice (Wenger et al. 2002, p. 69).

In the beginning, the organization must figure out the potential of a planned community of practice. At this stage, it has to clarify the key domain: the topic which the community will handle. The domain has to be important and valuable for the organization and community. It should be widely attractive and appropriate to collect potential members. At the starting point, it is also essential to discover whether there are any networks that are already discussing the topic. In this case, the community should be built around these existing structures. Other key tasks to perform are identifying the coordinator or coordinators, interviewing potential members, evaluating their commitment, starting to build connections and defining preliminary working methods. After the potential is determined, it is time to coalesce the community. At this stage, the community should select a case to show the value of its work as quickly as possible. Launching can be visible or quiet depending on the organization's culture and the community itself. At this point the community should agree the periodicity of the events and the spaces where the community will work, authorize community coordinators, connect core members,

find and document valuable opportunities and ensure management support for its work. (McDermott 2000, p. 22; Wenger et al. 2002, p. 70-90)

While many communities of practice are created by themselves and operate without the organization recognizing their existence, they can also be set up and raised by directing as described above. In this case, the competence of the community coordinator or coordinators plays a crucial role. In order to utilize the necessary expertise, the experts should be identified and get involved in some way. This requires coordinators working within the community and recognized by the community, whose roles may include, for example, creating inspiration, maintaining activity, collecting and documenting knowledge, taking care of collaboration between people and between communities, communicating with the organization, or supporting particularly significant innovations. (Wenger 1998, p. 7) Wenger et al. (2002, p. 51) define that the forming and developing of the community of practice can be aided in multiple ways. Table 12 shows seven principles which will help in guiding and supporting the development.

Distributed communities cannot perform face to face communication. They may also have other boundaries such as cultures, countries, languages, time zones, organizational units and even used technology. With large distributed communities it is also difficult to know each other personally, which challenges the community dialogue. However, they have greater diversity in many ways. Because of this, the community has to use different kinds of communication methods more efficiently. The community should also learn how to handle cultural differences and in this way minimize the cultural influences in their work. When designing a global community of practice there are four topics to concentrate on more than when formulating local communities. Firstly, the community members have to find a common understanding of issues. Secondly, the community should create a structure that accepts diversity on a local and global level. Thirdly, regular events have to be formulated so that the community is visible in all locations. Fourthly, community spaces have to be built by focusing on core practices and methodologies. (Wenger et al. 2002, p. 116, 123-133)

Table 12. Guiding and supporting the development of a community of practice (summary from Wenger et al. 2002, p. 51-63).

Principle	**Target**	**Assignment**
Design for evolution	Speed up the community evolution	Combine suitable elements such as involving people, coordinating work, having regular meetings, building relationships and proceeding step by step. Do **not** define activity too precisely, the community will evolve by itself.
Open a dialogue between the inside and outside perspectives	See possibilities more clearly	Lead the discovery inside the community and bring ideas from the outside by benchmarking another already operating community. Do **not** try to design the community outside, only an insider can understand community issues.
Invite different levels of participation	Allow the community to develop freely	Keep the community open for different levels of interest. Allow the members to move between core, active, peripheral and outsider groups. Do **not** try to seek equal participation, people have different motivations for participation anyway.
Develop public and private spaces	Build better relationships among community members	Arrange public meetings, participate in private discussions and link participants with other experts from all levels of participation. Do **not** focus too much on public meetings.
Focus on value	Clarify the value of the community	Discuss the values of the community in public meetings. Allow the members to share their thoughts about the values and raise awareness about them. Do **not** expect the values to be clear in the beginning.
Combine familiarity and excitement	Create an innovative environment for discussion	Provide the community with a safe space for discussion about new exiting ideas and offer help on projects without consequences for its members. Do **not** commit people to action plans.
Create a rhythm	Keep the community alive and vital	Build a rhythm with regular events and fill the time between with regular site activities and informal discussions. Do **not** wear down the community with too many events or fall asleep with long periods without any events.

4 ANDRITZ AS PLATFORM OF VIRTUAL COMMUNITIES

The beginning of this chapter describes the target company of the research and more specifically the target organization for which the research is directed. The next part summarizes the company's values and strategic goals that also define the organization and the operating model for the virtual innovation community. After this is a presentation of the existing operation model with a product home, that is a technological authority and will give a baseline from an operational point of view. The last chapter will collect and analyze an implemented pre-questionnaire of expectations for product management which can be seen as an one example of a requirements for virtual innovation community of professionals.

4.1 Description of the ANDRITZ as a company

The target company of the study is a globally operating facility, unit and service provider ANDRITZ whose main customer groups are hydroelectric, pulp and paper, metal and iron manufacturing industries as well as the separation and pellet industry. ANDRITZ has about 29 000 employees in over 40 countries. The company’s headquarters is located in Graz in Austria. (ANDRITZ 2019a)

ANDRITZ Oy is in charge of the company’s functions in Finland and employs about 1200 people in its Finnish units in Helsinki, Kotka, Lahti, Varkaus, Savonlinna and Tampere. One of the most important customer groups of ANDRIZ Oy is the pulp and paper industry. ANDRITZ supplies to this customer group wood processing, fiber line, chemical recovery and other pulp industries’ processing systems, units and services. (ANDRITZ 2019b)

The wood processing service product group at ANDRITZ supplies spare parts, modernizations and services for wood processing, starting with wood receiving, debarking and chipping all the way to storing of wood chips and transport to the

mill. The supply aims to improve the reliability, effectiveness and environmental friendliness of the customers' processes and to develop new solutions to lower the life-cycle costs of the processes. (ANDRITZ 2019c)

4.2 Description of the ANDRITZ wood processing service

The ANDRITZ wood processing service product group is a part of the global pulp and paper industry's service business. The service unit based in Lahti, Finland works in close cooperation with the wood processing project unit that provides new wood processing lines. Together these units form in their own process and business areas a so-called product home, which is responsible for the development of processes, machinery and services. The service business supplies both concrete deliverable products and services that are carried out at the customer, for example installation, maintenance, storage and process optimization services. In global service business sales units that are located in different continents (regions) close to the customer have an essential role. Professionals who can serve local customers and work in close cooperation with them work in these units. Chart 2 depicts an example structure of a global organization.

A global presence close to the customer generates new competency locally and grows expertise, whose utilization in development work is not completely optimal. The goal of wood processing service business is to expand its professional organization to a global scale so that development work could be carried out in a manner that considers the customers' needs and local requirements better. In practice this should be carried out so that the best professionals in sales, design, project management and site operation who work in sales units are engaged in the planning and execution of development work, and in selected cases some responsibilities are transferred to them.

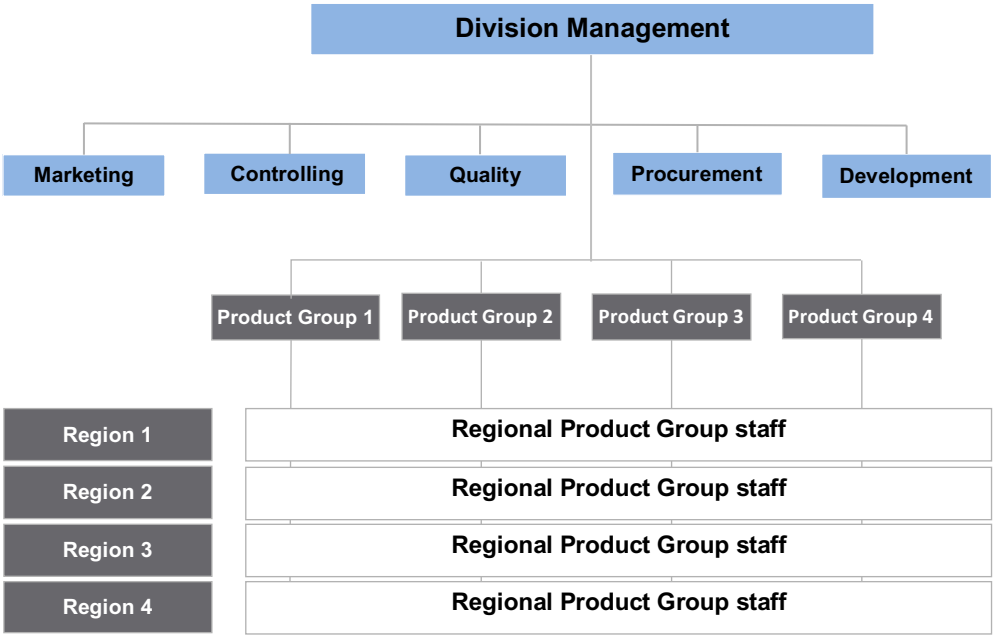

Chart 2. The structure of a global organization.

4.3 Values and strategic goals of ANDRITZ

The ANDRITZ values are described as follows (ANDRITZ 2019d):

Passion	-	Company differentiates from others in how passionately we take our work
Partnership	-	Company appreciates reliability, integrity, respect and a partnership
Perspectives	-	Company creates new innovations with our entrepreneurial spirit
Versatility	-	Company develops our talents by education and new challenges

The ANDRITZ strategic goals include growth, technological and cost leadership and a global presence. Growth is based on research and development, smart technologies including IIoT and complementary acquisitions. In the technological

area the company is one of the leading suppliers of its kind. It sees itself as a preferred supplier and technological leader in its business. Increasing profitability is one of the company's goals. A global presence means both global and local operations. This means finding new markets from emerging economies but also offering service close to the customers. (ANDRITZ 2019e)

4.4 Existing operation model of wood processing product home

The product home in ANDRITZ wood processing has been developed over a long period of time. Skilled people have worked with special machinery and process design and their deliveries. Everything has been done closely connected to the customers and manufacturing facilities. Over time, delivering spare parts to the customers and their installation have also been necessary. With the knowledge of processes and project handling, the company has had the opportunity to offer multilevel modernizations to old process lines. Wide knowledge has accumulated over time in a specific location, employee skills, organization documentations and operational routines of the company. In this way, the recognized product home has been born. In the industry, this is a relatively common manner in which product homes, knowledge centers, centers of expertise, etc. have been established.

The product home is an authority in its field. It gives guidelines on which technical solutions the company will use in its deliveries. In this way it is tightly connected to strategic planning and daily business. It also educates employees in the other regions on solutions and collects feedback from customers. The product home is responsible for following general technological development and existing trends. With all available information, it develops products and services further, protects intellectual property rights if needed and starts the next round of guiding and education within the local company and its regions. During this process it also develops itself. There is an endless need to educate its own people and hire new employees from the inside and outside of the company.

In the product home of ANDRITZ wood processing the core of its professionalism is the technology organization. It is built to collect different experts in the appropriate departments. In one location this is a suitable way to present and recognize a team of experts, product managers, process experts, development people and documentation specialists. Around this technological core there are other important functions like the health- and safety organization, quality organization and many other operational resources for different needs. The main driver in the technology departments is deep knowledge of processes and solutions that are in the front line of technology in its industry. The deep technological know-how requires personalities who are technology oriented. This may cause challenges with different personalities of other functions, and in global perspective also with different cultures. This has influence on spreading innovations inside the company and handling the feedback from the sales face and customers. It is commonly known that if you are truly an expert and in the dominant position in your field, you may not be the best possible listener. This influence is softened by organizing common meetings with different organizational groups and building forums to discuss and share information in rational ways.

In their daily work, experts of the product home participate in sales and delivery processes, lead the development and engineering of their own piece of equipment, prepare internal and external documentation and in many cases also perform the engineering itself. This has been done according to the appropriate time schedules and under the control of the head of the department. In a multitasking environment, prioritization is needed. In this situation, working with other organizations and cultures won’t usually get the highest priority during the day. This will require good leading skills from the head of the department.

In a large multi-industrial and multinational organization, the main processes are specified, and reporting is connected to the year clock of the company. Computerized work and globally shared programs are part of daily life in all levels of the organization. ERP (enterprise resource planning) is the main software system which is the core of business planning and management. In addition, there are many

other software tools such as engineering software and handling systems for document, customer, supplier and other information. Communication inside one location is possible with face to face meeting but between different regions it is mainly based on e-mails, Skype meetings and phone calls.

4.5 Expectations for wood processing product home today

Product home-based knowledge handling can be seen as a starting point or baseline for the development of a virtual community of professionals in selected areas which does not exist so far. Previously, the target company and organization were analyzed as well as its existing operation model, values and strategic goals. Now, it is important to take a step closer to the company's employees by collecting and analyzing their expectations for the product home and its future form. In this way, it is possible to add one perspective to the analysis and support decisions when formulating the tools for virtual community planning and when building communities for the needs of the target company. This has been done by arranging a small pre-questionnaire for regional employees before building expectations for more global and virtual working methods. The questionnaire includes one multiple-choice question with a possibility to give one self-formulated answer as well. The question was: "Which are the three most important goals of product management in general?". The question was selected to be simple and clear and it was tightly fixed only to the meaning of the product home. On a global scale, it is a crucial element for the success of the expert community. The questionnaire was sent to 32 people and answers were received from 25 people from 10 countries that covered five continents. A couple of people only gave two selections, but all the others gave three, as was instructed. The answers of the pre-questionnaire are collected and shown in the Chart 3.

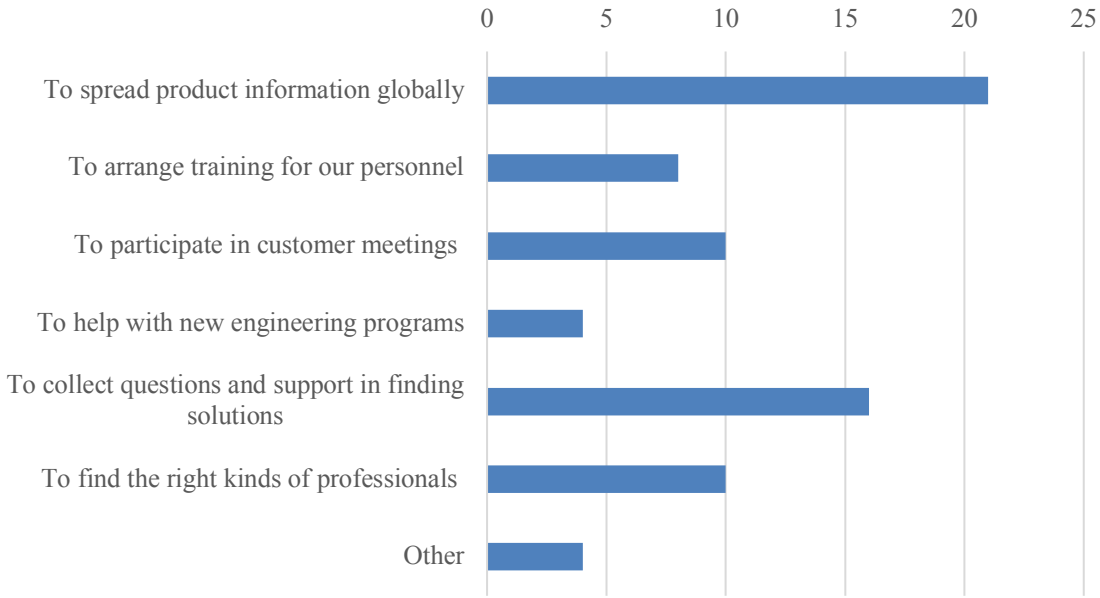

Chart 3. The collected results of the pre-questionnaire concerning product management

Self-formulated answers include product and process development needs, product portfolio management and deeper cooperation with regional engineers. From the results, it can be seen that information sharing and active co-operation, especially when searching solutions for regional questions, are important areas to consider when planning a virtual community of professionals in this area.

5 COLLECTING FACTORS FOR TOOL FORMING

When developing tools for a global company for planning its virtual team of professionals, the most important findings of the theoretical framework should be recognized. In this chapter the findings that are relevant to the task are collected, shown how they relate to the research objectives and visualized by grouping them in an appropriate way. This is a part of the tool-forming process and constructs an informative basis for further development. An actual innovation community tool is formed and presented in the next chapter.

5.1 Company's knowledge factors

In the beginning of the theoretical background of this study, information and knowledge and the ways in which to develop them are explained. More specifically, the features that the information includes are identified, as well as the meaning of knowledge and what should be taken into account when knowledge is developed. These basics are important in both local and global multiregional companies. Companies have new and present as well as tacit and explicit information or knowledge, which is useful and valuable. Different knowledge is generated at the individual level and company level but in more global companies it is also spread all over the world. From a company's point of view, it is therefore even more secure to transfer and develop knowledge at the company level for its technology, guidance and culture. This is possible to do in several ways as discussed in chapter 2.1 but is in any case and on all operational scales the process where knowledge needs to be identified, developed and transferred. Knowledge creation and development on the global basis, if effective, demand risk-taking capacity, flexibility, motivational atmosphere, focusing to the core and the ability to combine information across regional boundaries. This is the foundation that should be remembered and understood when planning and building a virtual community of professionals. The factors described above and related to knowledge are visualized in chart 4.

Chart 4. Company's knowledge factors.

5.2 Company's knowledge management factors

When a company has valuable knowledge, it needs to manage it. In chapter 2.2, some areas of this theme are identified, such as the organization's and its employees' capabilities, the company's ability to exploit necessary innovation processes, understanding innovation diffusion mechanisms and different kinds of behaviors of its employees as well as operationalization of theoretical models. Basically, these are already formed on a more global basis and in this way, they are applicable as they are. A globally operating virtual team has to have abilities for self-management, questioning current knowledge, sharing common goals, learning

as a community and recognizing the interrelations between things. At the heart of this process are the members of the virtual team who should absorb the new knowledge within the company, including all regions, and from the company's local and global network.

When sharing the created, developed or simply owned knowledge globally, it follows the diffusion curve of innovations. As described in the theory, in this model the awareness of new innovations, and in this context the knowledge, will spread in a certain time within the organization depending on the knowledge itself, how interesting and usable it is, what the used information channels are and what is the global organizational structure. When new knowledge reaches employees in a specific region and its locations, how an individual employee will take advantage of new knowledge depends highly on their personal factors. When expecting some results of new knowledge, it is therefore good to recognize who is an innovator, an early adopter, an early majority, a late majority or a laggard. By focusing on locally operated innovators and early adopters, it is possible to increase the diffusion speed.

The sharing process itself is a strategy based but operational task. In a global organization it needs to be formed globally from a company's point of view and locally according to local structures. According to theory, it is the most important to take care that the new knowledge is recognized and somehow visible, available at the right place at the right time and shared by using the right kinds of methods so that it can be adapted to a use that creates value. In these tasks, the company should recognize the specific needs of knowledge creation, storing, transfer and exploitation. Within a global company, when designing a virtual community of professionals, it is important to choose the right kinds of information technology solutions to reach these targets.

As a summary, it can be said that knowledge management in globally operated virtual communities is more or less the same as in locally operated teams. When compared to local teams it is more important to take into account the local company

structures and the utilization of suitable information technology solutions. The main findings concerning knowledge management in virtual communities of professionals are visualized in chart 5

Chart 5. Company's knowledge management factors.

5.3 Team factors

A community that works on a global basis has naturally many similar factors than a team that works a local basis. There are also multiple members from the organization who have specified and interdependent tasks as well as a common goal, in which the members interact with each other and communicate with the

organization. The effectiveness of a virtual community of professionals depends on the team's organizational status, how the organizations in different locations see the meaningfulness of the team and how the team itself sees it. As described in the chapter 2.3, the team develops over time from formulation to compilation. The degree of team development is good to recognize because it also measures the expected results in a specific moment.

As the theory shows, team behavior is a large and complicated subject where individual characteristics play an important role. In globally operating and culturally heterogenic teams some characteristics make things even more complicated. To avoid conflict and to ensure the quality of group decisions, it is preferable to understand some facts about team dynamics and to follow some basic rules while formulating the working methods of the virtual team. It is good to realize that the team easily and generally chooses the most popular idea. When working globally and if there are multiple people from each area, there may be a risk of multiple localized ideas that fight against each other. Another issue is that individual targets are present that affect the decisions on an individual level. Locally they could be handled, but in a virtual environment they are already hard to recognize. To reach the best possible results according to theory, communication needs to be open and clear and the whole work needs to be formulated in a rational way and based on clear rules. Selected team factors are visualized in chart 6.

Chart 6. Team factors.

5.4 Team exchange factors

One area in team work is the motivation of its members. According to the theory, the main motivator is the exchange of intangible and tangible assets. In virtual teams this exchange takes place within a team, between local organizations and the team, and between the company and the team. Assets of the team members are communality, efficiency, participation, membership, loyalty and positive attitude. From the company and its organizations, the assets are support, security, promotion, salary, benefits, employment, social role, tasks and knowledge.

Because of this multilevel and multidirectional exchange, the group works well if this exchange is balanced. This means that free riders are not good for the team's effectiveness. In a virtual team of professionals, as it is mainly working with intangible assets, its members must have some valuable information or knowledge to share. Exchange means information flowing in both directions. Because of this, the team members cannot only collect information or knowledge from others or announce their ideas as the only truth. They should be capable of listening to the comments of others on their information and the information others like to share. In virtual teams the distance makes good dialogue difficult to reach. This highlights the importance of ground rules for the virtual team of professionals and effective information sharing tools.

As described above, an exchange is an important but complicated issue in a virtual team of professionals. All exchange asset types should be discussed and then the most significant factors identified in each case. Exchange asset types from an individual view and from a company or organizational view are collected in chart 7.

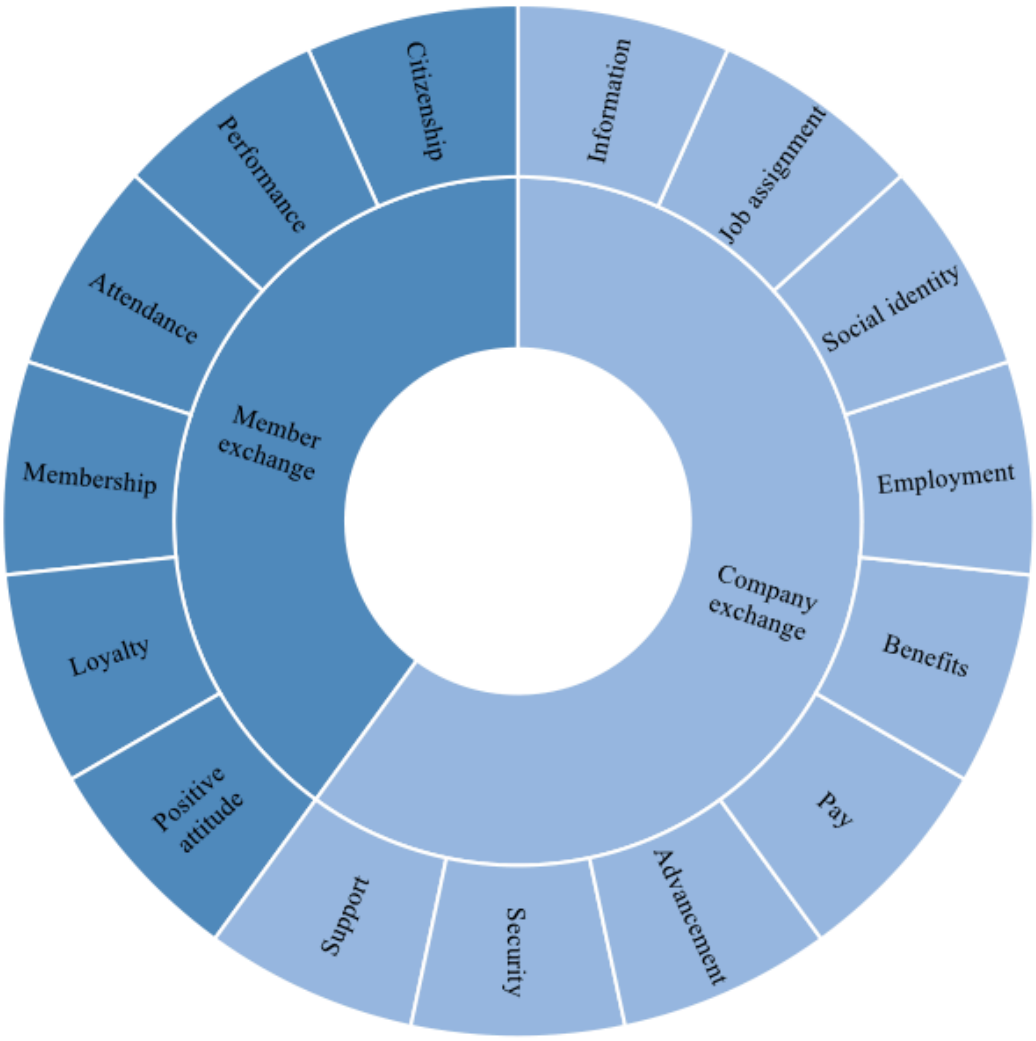

Chart 7. Team exchange factors.

5.5 Virtual team factors

A virtual team of professionals is challenging to lead. As described earlier in the theoretical background, there are easily long distances between the members of a virtual team, which usually also means time differences. The team members are often from different cultural backgrounds which have to be taken into account when planning the work of the team. Difficulties in organizing good communication within the group as well as large amounts of information to be handled set requirements for the used information technology. Good and clear communication plays a crucial role and influences the work of the virtual team in many ways. The

goal must be finding ways to work together, and with them, to build consensus within the team. If it is possible to organize face to face meetings with members as it will make forming the group easier but if not, at least in the beginning it is good to organize tasks so that the team members will work as a pair and in this way will learn to know each other. In chart 8 the important factors of a virtual team and its work are collected and visualized.

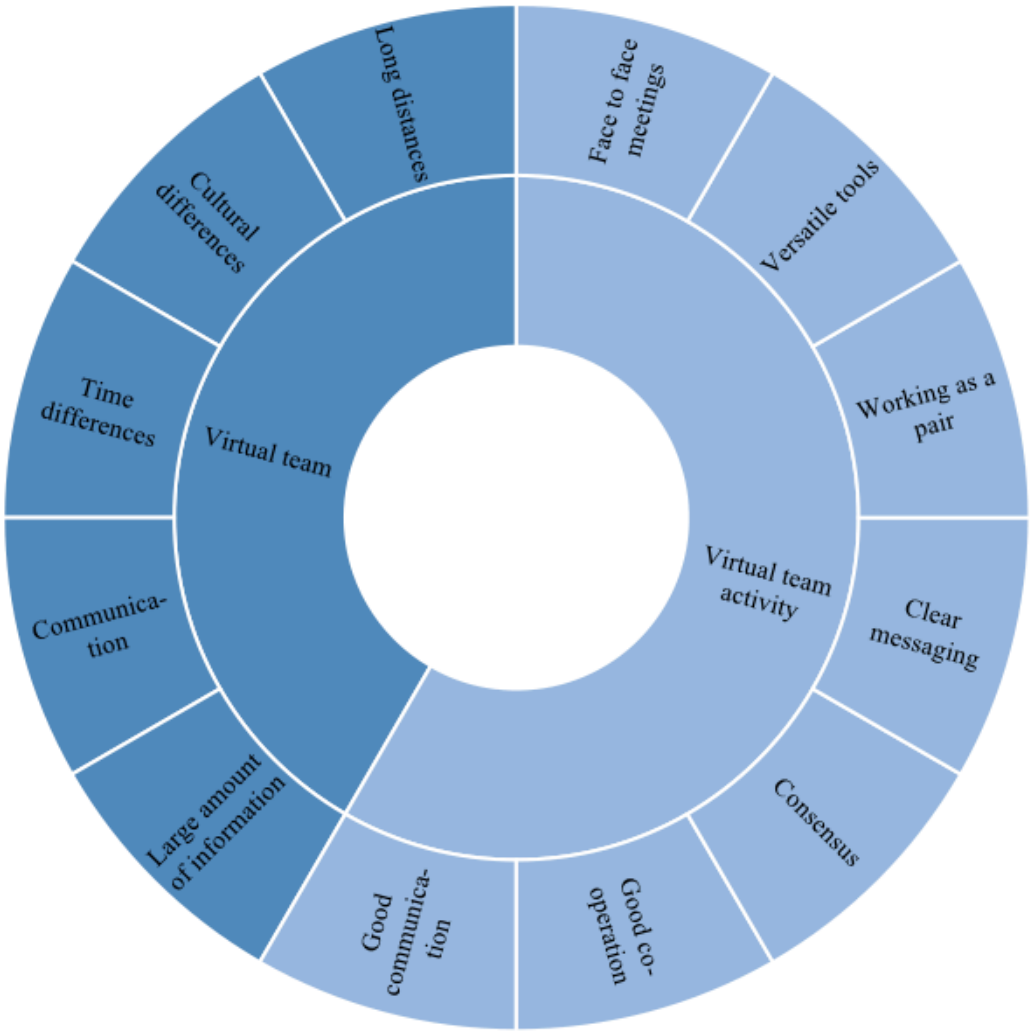

Chart 8. Virtual team factors.

5.6 Cultural factors

It is good to understand more deeply how a cultural background influences the virtual team of professionals. In the theoretical background, differences between monochronic and polychronic timing are presented. Organizations in Western Anglo-Saxon monochronic culture preferred scheduling what they do. At the same time they like to be accurate when speaking about information and they like to structure their organizations according to work flow which often leads to a divisional forming. Collaboration with different divisions is a natural way to work in these monochronic cultures. In Latin, Mediterranean and Russian culture people are the core of operation. They are also more flexible and cooperative within the team. Because of this they are more capable of solving different kinds of problems. They are not so tightly fixed with processes but are keen to complete their tasks.

Another way to recognize cultural differences is to clarify how equal people are in one specific country or area and how they think about their future. This leads to four groups of organization types and models. Anglo type countries' organizations are not as workflow oriented as in Saxo type countries' and are therefore more of an unstructured type. In Saxo type countries orientation according to workflow highlights the efficiency of operations. Far East organizations are structured more according to people and they look more like family. In the Latin area organizations have a hierarchical form with a clearer balance of power. The US is more in the middle of the four areas and usually US companies have a divisional organization type and not as structured working methods. All cultural factors are collected and visualized in chart 9.

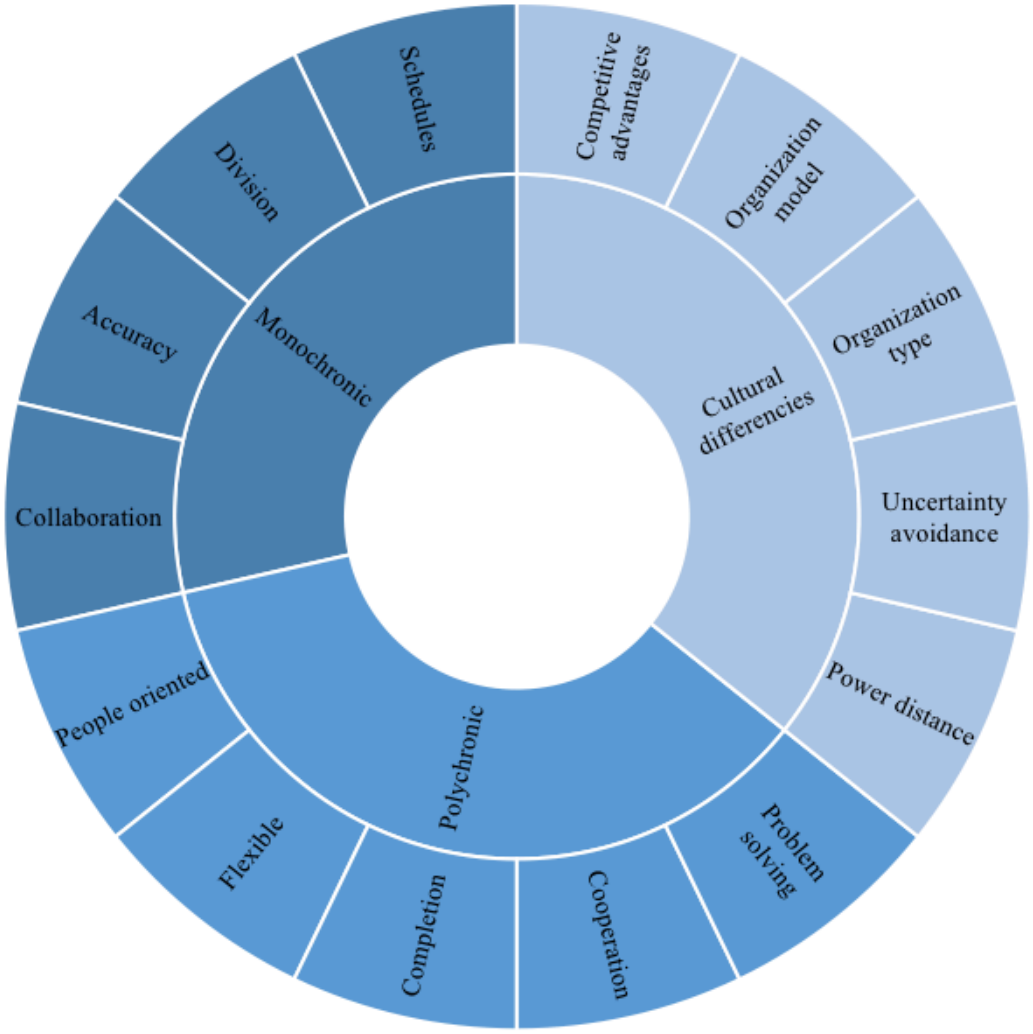

Chart 9. Cultural factors.

5.7 Team forming and operational factors

The community of practice which is presented in chapter 3 is one model of how to organize a group of people for an assigned task. It is already a model that seems to suit to a virtual team of professionals relatively well. The model gives a framework on how to build a group which is self-directed and open for new members who are valuable for the group. The motivation of group members, or community members in this case, grows from freedom and professionalism of a specific topic. It is known that we already have these kinds of communities in our organizations, however they

usually do not have any organizational status. The community of practice lasts as long as the domain of the group is valuable. During its lifetime it develops from imagining its potential to value creation and finally to transformation or closure. The coordinator or coordinators of the community have an important role in keeping the community active and alive during its lifetime.

In the theoretical background the community of practice is described extensively. Because of this description it is possible to carefully evaluate the model feasibility in the context of this study and other similar situations. From this description it is possible to see that in the background of the model of global presence there are many of the same factors which have already been mentioned before, such as different cultures, countries, time zones and technological issues. The model also argues that there must be common understanding within the group, diversity has to be accepted, some rules need to be applied and there have to be clear methods on how the group will practice.

Global companies have some structures and operating models because without them they cannot operate. Additionally, local practices and laws define these operation models. Employees are tightly connected and easily fully loaded with operational tasks. In this environment, it is extremely difficult to find time and give a status for the group that does not have a clear organizational form and activities. As mentioned earlier, in some cultures people also expect clear formulations. Because of those, there is a high risk that the community of practice cannot reach the best possible experts worldwide and that the value of the community has not been recognized in the all locations of the organization. In this way it is cleverer to combine existing company culture and previous findings from the theoretical background that are also behind the model of the community of practices as well as most valuable findings from the model itself. This means that there will be some structural form in the virtual team of professionals but at the same time it will be built according to its members' passion and commitment.

The model of community of practice highlights some additional key factors for the forming and operation of virtual team of professionals, which are not described earlier. Those factors are collected in chart 10. First area is to think the configuration of the team. How the members should be selected, what are the main criteria for suitability of members, are there some reasons to formulate hierarchical structure in the team, what are the cultural effects for the team structure and finally what is an appropriate size of the team or are there any limits. Secondly, some practical and operational things will have strong effects on team work and results. The communication inside the team and to the organization needs to be described. By which method the team will use in the communication, affects the team efficiency specially in virtual teams. When and how the team will meet has to be agreed so that the team works continuously and from the organizational point of view also efficiently.

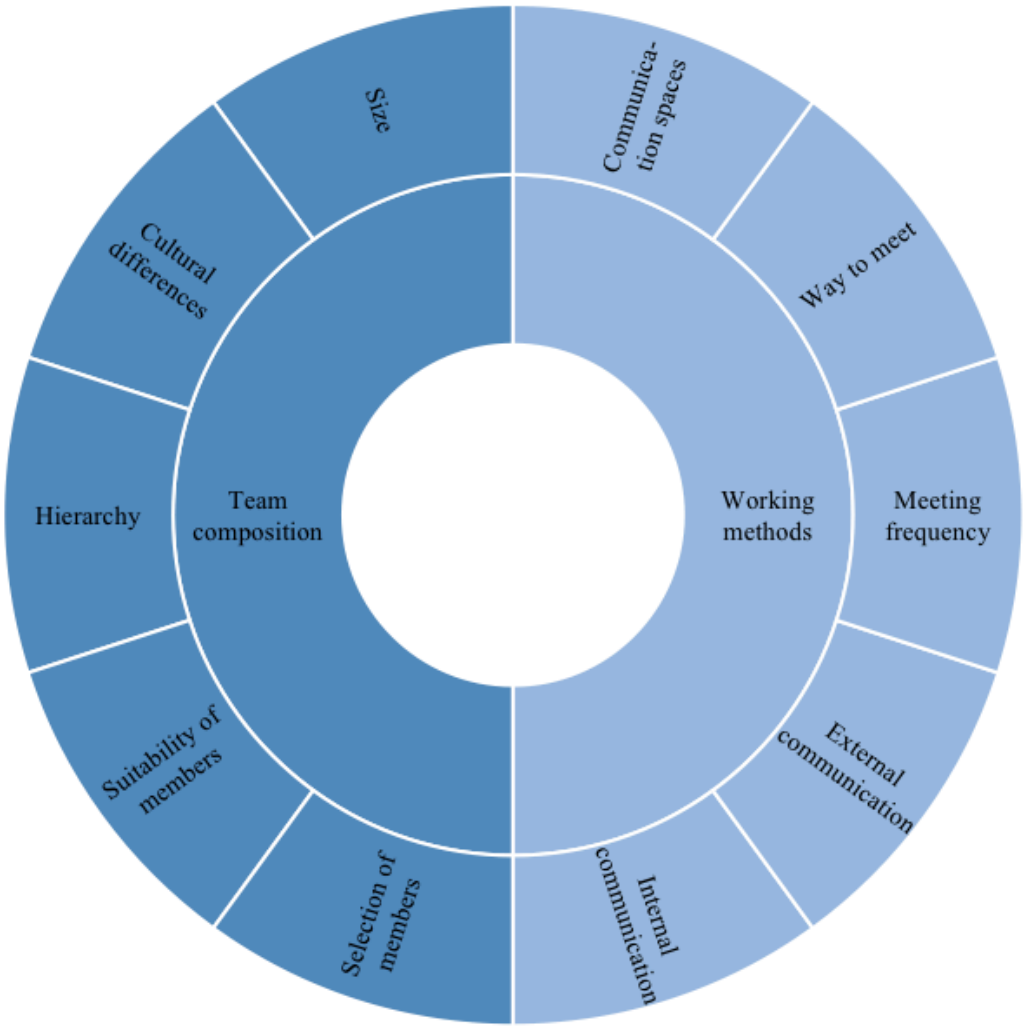

Chart 10. Team forming and operational factors.

5.8 Team leading and guiding factors

As described in the theoretical framework, leading the team is the third important area to consider when modelling the community of practices and it is also important to be taken account when designing the virtual team of professionals. It is necessary to coordinate the work clearly, handle information efficiently, report the team work and findings to the organization as well as to seek valued status of the team. The personality and professionalism of the leader influences directly in that area and because of that the selection of the team leader needs to be prepared carefully.

The fourth area in the model of community of practices, which is generally usable for the virtual teams, is how to support the team development. In the theoretical framework the summarized seven principles include important findings, how to support the development in that way that the passion and commitments of the team members stay in the best possible level. When describing the team year clock with the regular meetings and when planning the team work itself, it is important to leave some space for the team's own will. The team leader should be a member of the team and lead the work inside but in the same time he or she should be open minded and active when benchmarking other virtual communities or teams of professionals. The team shouldn't be closed, because there may be potential new members who can be considered to add value to teamwork. The team leader should follow and participate in the discussion in all levels. Because of that the working methods and tools should be selected so that there is enough transparency. The meaning of the team needs to be discussed, because it is important to the team itself, but also to the organization. When the team starts to be valuable for the organization it will have an accepted status as well. When discussing and collecting the ideas in the team, the tasks should be designed separately. It might be better to formulate a working group of some specific tasks first and start the discussion after that, so that members feel free to share their knowledge during the discussion. It is good to listen regularly how the team behaves and then to act according to its mood. As far as the membership of the virtual team of professionals is an additional task for them and when the passion and commitments of its members are essential for the team results, it is necessary to keep an overall workload of members in the reasonable level. Factors which are important for the leading and guiding the team are collected in chart 11.

Chart 11. Team leading and guiding factors.

5.9 Company factors

As described in chapter 3.6, the company itself, its network and strategic process define multiple important factors when forming the virtual team of professionals. Based on that the strategic process from mission, values and vision to action plans are the core of operation from the small to large organizations. In that process the company will base its working to mission, what is the meaning of the company, the values, the basic principles in its operations and vision, what the company wants to be in the future. They should be seen also important when planning and structuring

the virtual teams or communities as well as forming their activities. Based on those three main elements, the company defines its strategy, focus and plans. It is also essential to set strategic goals, reachable and measurable targets as well as concrete actions for the virtual community. The community itself should be part and to be seen in the company's action plans. In that way the community will have clear meaning from the organizational point of view.

The company structure is built according to business opportunities, customer segments, company size and different locations. As described in the theoretical background, the company has several organizing strategies when it is planning its operations in global markets. As well as in the target company, also in many other large companies the structure from corporate and divisional level to local organizations with product homes or center of excellence is the environment where the virtual community of professionals will operate and where it has to suit. As described earlier the community should also have some structural form. In the large companies it can't float somewhere without any fixing point in the company, because the organization, local practices and some cultures simply demand some structuring. Additionally, organizations have different support functions, who might be directly connected or who have at least influenced to the community operations.

In its operation the virtual community of professionals works inside the organization but might also be connected outside with the customer, subcontractors and other possible actors as described in the chapter 3.6. Those connections and information flows in the company network should be recognized, visualized and agreed within the team as well as with the organization. That will help the community when structuring their working methods, the roles of individuals, and help the community when it is evaluating necessary expertise from outside the team. Clear connections also prevent conflicts in the company network. If the network includes customers or subcontractors, it needs to be clear and agreed which kind of

communication is possible. It is important for the company as well as the customers or the subcontractors, that ongoing deliveries and possible developing issues won't disturb each other.

The strategic process of the company, its structural elements and networks create the framework, where the planned virtual community of professional will operate. Those three areas and most important findings from them are presented in chart 12.

Chart 12. Company factors.

5.10 Company's unique operational, cultural and situational factors

The operational and cultural aspects of the company are dimensions which have influences on the activities of the virtual community of professionals. They both are wide areas to describe without any gaps. In this point it is possible to support the analyze by looking the target company and how it has been built, how it operates the product home organization and what kind of future expectations the organization has. The company has expertise in product home organization as well as in global service units. In that way it is important to identify which parts of the organization the best possible resources are located. People who are closely contacted with the customer are experts in their own field and they need to be recognized when selecting members to the community. If the results of the community are expected to be higher than at the moment, that step has to be taken. If the programs used don't support the collaboration of the virtual communities of professionals, the company needs to evaluate how to react to that dilemma. And as already described, good and clear communication with tools sufficient enough is necessary in virtual work. It is also necessary for the organization, that knowledge is shared efficiently, and the discussion takes place to both directions. That is also supported by the pre-questionnaire that took place in the beginning of this work (chapter 4.5). The regions are expecting good information sharing and listening.

The culture of the organization has different layers. Global, regional and local cultures need to be taken into account when selecting team members and when planning the tasks. The most optimal situation is that the structure and the operating model of the team should be formulated so that it is according to company culture, but in the same time allow the presence of cultural differences. There are some situational factors too, which might have a strong impact, especially when forming and putting in operation the virtual communities. In many cases they have more effects than any other factor. As described also earlier, one important factor for the community is company support. If a company has lack of money, workforce or mutual support, it will have bad influences on the size, meeting frequency and motivation of the virtual community. Because of that, it is essential, that the virtual

community of professionals is included in the company strategic actions and it will have some budget as well as supervisors to take care that members have the opportunity to participate teamwork.

The operational, cultural and situational factors of the company are collected in chart 13. They include main findings, that will have the biggest influence on the structure and work of the virtual community of professionals. It is worth recalling that the compilation presented is not comprehensive. If the company recognized some features that are important in its business and operations, they should be considered when formulating the plans.

Chart 13. Company's unique operational, cultural and situational factors.

6 INNOVATION COMMUNITY TOOL FORMING

Based on the theoretical framework, there are collected and explained in the previous part the 152 factors, which are most important when planning the virtual innovation community. They are grouped in an appropriate way to the ten key areas presented in the charts 4-13. The actual innovation community tool has been developed from those ten key areas and is presented in this chapter.

6.1 Principles of the tool forming

The innovation community tool is presented in the form of ten tables. Each table includes previous findings from the chart 4-13. Each of those factors are translated in the form of actions. With the implemented action, the selected factor has been considered when planning and guiding the virtual community of professionals. The actions have been fixed into the selected key area and they need to be understood according to that framework.

The tables can be used in many ways. Firstly, they can be used as checklists. Because they are grouped according to the company´s point of view as well as the community's point of view, they are easier to use. Secondly, the situation of each factor is possible to value from zero to three. Those four stages are meant to be appropriate and effective with this kind of valuation, where is a risk that opinions vary between individuals. Other criterion is, that because of even number of stages the assessor must think about his or her selection more carefully comparing to uneven stages, when there might be a temptation to choose the middle value. This harmful phenomenon is also known as a compromise effect (Simson 1989, p. 717). With valuation it is possible to calculate a success factor of each key area or of the community. The calculation is possible to perform before forming the group, but also during the group lifetime when analyzing the development of the community. The values can be selected as follows:

0 Hasn't/haven't been taken into account or not known
1 Has/have been taken into account, but actions hardly implemented
2 Has/have been taken into account and actions largely implemented
3 Has/have been taken into account and fully implemented or no need to implement

6.2 Formed tool

All ten tables of the ten key areas have been collected to the next ten pages. In the tables, factors have an order number for better identification when discussing about the specific topic. Other columns include the value of the factor from zero to three, focus area, selected factor and actions to implement. The formed tables include the following:

- Table 13. Key area 1: Company knowledge factors. Different features of knowledge and clarification of what kind of company environment is needed when creating new knowledge.
- Table 14. Key area 2: Company's knowledge management factors. Features of learning organization and considerations when planning knowledge sharing and different support systems.
- Table 15. Key area 3: Team factors. Features of the team, development stages of the team and basic principles of teamwork.
- Table 16. Key area 4: Team exchange factors. The most important exchange instruments of the company and the team as well as their practical meanings.
- Table 17. Key area 5: Virtual team factors. Additional features of the virtual team or community and how to handle those unique features within the team and its operations.

- Table 18. Key area 6: Cultural factors. How to handle persons from monochronic and polychronic cultures in general and the most important features which should be understood within the multicultural communities of professionals.
- Table 19. Key area 7: Team forming and operational factors. Main features which must be clear, when planning the community and its communication.
- Table 20. Key area 8: Team leading and guiding factors. List of the features which are important for the team or community leader as well as factors which will have an important role when developing the community.
- Table 21. Key area 9: Company factors. A description how company's strategic process can be combined with virtual community of professionals, how the company structure can be seen in the community and how company network will affect the community.
- Table 22. Key area 10: Company's unique operational, cultural and situational factors. As far as all companies are different, their most important unique features, which must match with the community and its composition are collected and explained in the table.

Table 13. Company knowledge factors.

No.	Value				Focus area	Selected factor	Actions to implement
1.	0	1	2	3	Importance	Valuable	The economic value of knowledge is defined
2.	0	1	2	3		Usable	New knowledge is usable, and it is also actively exploited
3.	0	1	2	3	Features	Present	Present knowledge is defined and systematically collected
4.	0	1	2	3		New	New innovation and knowledge is actively searched and saved
5.	0	1	2	3		Tacit	Tacit knowledge of employees and organization is actively gathered with programs
6.	0	1	2	3		Explicit	Explicit knowledge is available and easily reachable
7.	0	1	2	3	Forms	Experimental	Employees tacit skills are recognized and noticed in the task definition
8.	0	1	2	3		Routine	Tacit knowledge is seen as a practical daily routine
9.	0	1	2	3		Conceptual	Products, services and brand are visualized and presented
10.	0	1	2	3		Systemic	Company has structured methods to collect product documentation
11.	0	1	2	3	Requirements	Risk-taking	Company is anxious to develop new products and services as well as to reject unprofitable ones
12.	0	1	2	3		Flexibility	Company has capability to change its structures according to the needs of new knowledge
13.	0	1	2	3		Atmosphere	Company motivating its employees to create new innovations and knowledge
14.	0	1	2	3		Focusing	Company has selected industrial and technology areas
15.	0	1	2	3		Combining	Company actively combining tacit, explicit and new knowledge between its units
16.	0	1	2	3	Creation	Internalization	Organization is more focused to learn new ways of working (3) or building its operations based only on existing routines (0)
17.	0	1	2	3		Socialization	Organization actively comparing its own working methods to other companies and isn't fixed only own learning
18.	0	1	2	3		Externalization	Organization spread selected working methods of individuals to the whole organization
19.	0	1	2	3		Combination	Organization has discussion forum or other similar tools for cross functional and cross divisional knowledge sharing

Table 14. Company's knowledge management factors.

No.	Value				Focus area	Selected factor	Actions to implement
20.	0	1	2	3	Learning organization	Self-management	Teams of professionals have autonomy in their working
21.	0	1	2	3		Questioning	In the company, current knowledge and authorities are possible to challenge
22.	0	1	2	3		Common goals	Company goals are modified to goals of teams of professionals
23.	0	1	2	3		Learning as a community	Equality is important in the company and in its teams
24.	0	1	2	3		Interrelation between things	Company has ability to gather enough information before decision
25.	0	1	2	3	Knowledge transfer	Innovation	Company has knowledge and innovation storage system
26.	0	1	2	3		Channels	Company organizes knowledge sharing to its employees
27.	0	1	2	3		Time	Company shares its knowledge regularly or even online
28.	0	1	2	3		Structure	Company has visualized its knowledge structure
29.	0	1	2	3	Knowledge diffusion	Innovators	Innovators are used for speed up knowledge developing
30.	0	1	2	3		Early adopters	Early adopter are used for finalizing products and plans
31.	0	1	2	3		Early majority	Early majority is used to transfer the knowledge
32.	0	1	2	3		Late majority	Late majority is used to collect information about the customer reactions and expectations
33.	0	1	2	3		Laggards	Laggards are used to challenge new and existing offerings
34.	0	1	2	3	Knowledge management	Recognize	Knowledge is actively identified and recognized
35.	0	1	2	3		Make visible	New innovations and knowledge are visualized
36.	0	1	2	3		Make available	Company inform its whole network about new knowledge
37.	0	1	2	3		Adopt	Company follows teamwork and adoption of the new knowledge
38.	0	1	2	3	IT systems	Creation	Data mining programs are in use for combining knowledge
39.	0	1	2	3		Storing	Knowledge data storing systems are defined and adopted
40.	0	1	2	3		Transfer	Electronic info screens, forums for discussions and knowledge storing systems are available for company employees
41.	0	1	2	3		Exploitation	Knowledge systems are available globally and new knowledge is actively adapted in to electronic tools

Table 15. Team factors.

No.	Value				Focus area	Selected factor	Actions to implement
42.	0	1	2	3	Team Features	Multiple members	Team members are selected inside the organization or its core network
43.	0	1	2	3		Independent task	The team tasks are unique and informed to organization
44.	0	1	2	3		Common goal	The goals of the team are known within the team and organization
45.	0	1	2	3		Interaction inside	Working methods have been described and informed inside team as well as to organization
46.	0	1	2	3		Tasks are dependent	All team tasks are connected to the team core competencies
47.	0	1	2	3		Handling boundaries	Communication between the team and the organization is described and visualized
48.	0	1	2	3		Inside organization	The team is formed inside the organization and it acts as a part of the organization
49.	0	1	2	3	Team development	Team formation	The team is already passed the team formation phase
50.	0	1	2	3		Task compilation	The team already has known members and defined tasks
51.	0	1	2	3		Role compilation	The roles of team members are already formed and communication between its members has started
52.	0	1	2	3		Team compilation	Team has reached level, where it works effectively and is ready to take on new tasks and expand their expertise
53.	0	1	2	3	Team behavior	Fixing to most important	Team targets are carefully selected, and all members have possibility to participate in the work
54.	0	1	2	3		Individual targets	Team members individual situation as well as personal targets in their own organization are recognized
55.	0	1	2	3		Clear communication	The communication within the team is open for all and team members respond quickly
56.	0	1	2	3		Rational working	Working of the team is planned, meetings are regular, and decisions have been recorded
57.	0	1	2	3		Openness	The team has a positive and open minded atmosphere

Table 16. Team exchange factors.

No.	Value				Focus area	Selected factor	Actions to implement
58.	0	1	2	3	Member exchange	Citizenship	Team members support the company in the strategic plans and actions of the company
59.	0	1	2	3		Performance	Team members have some motivation for the team work and they are goal oriented
60.	0	1	2	3		Attendance	Team members like to participate team meetings and discussions
61.	0	1	2	3		Membership	Team members behave like a good member and support the open minded discussion
62.	0	1	2	3		Loyalty	Team members have loyalty for the company and the team itself
63.	0	1	2	3		Positive attitude	Team members have a positive attitude and it is also visible to the organization
64.	0	1	2	3	Company exchange	Support	The company offers to the team members time and mutual support
65.	0	1	2	3		Security	The company clearly and concretely ranks the team work as valuable and important than the operational short term tasks
66.	0	1	2	3		Advancement	The company offers team members different and interesting career paths
67.	0	1	2	3		Pay	The salary of team members is comparable for the other specialists' salaries
68.	0	1	2	3		Benefits	The company offers to the team members opportunity to educations and networking
69.	0	1	2	3		Employment	The company is committed to support long-term work of the team
70.	0	1	2	3		Social identity	The company gives the team a status within the company network and recommends the network to co-operating actively with the team
71.	0	1	2	3		Job assignment	The local organizations offer team members time and tools for the efficient working
72.	0	1	2	3		Information	The company offers to the team and its members extensive access to the information needed

Table 17. Virtual team factors.

No.	Value				Focus area	Selected factor	Actions to implement
73.	0	1	2	3	Virtual team	Long distances	Long distances aren't obstacle the membership of the team
74.	0	1	2	3		Cultural differences	Cultural differences aren't obstacle the membership of the team
75.	0	1	2	3		Time differences	Time differences have taken in to account when teamwork is planned
76.	0	1	2	3		Communication	Team uses common language in all communication
77.	0	1	2	3		Large amount of information	Team has efficient tools for moving and storing large amounts of information
78.	0	1	2	3	Virtual team activity	Good communication	Friendly communication is highlighted to avoid misunderstandings
79.	0	1	2	3		Good co-operation	All members of the team are capable for teamwork and are capable to listen each other
80.	0	1	2	3		Consensus	In all cases good target is to reach consensus within the team
81.	0	1	2	3		Clear messaging	Target is to keep communication short and simple
82.	0	1	2	3		Working as a pair	Team working as a group, but to maintain activity, the work is also distributed to work pairs
83.	0	1	2	3		Versatile tools	Selected communication tools and their functions within the team and between the organization support openness
84.	0	1	2	3		Face to face meetings	Face to face meetings are planned to be possible, but they aren't the key factors for the success of the team

Table 18. Cultural factors.

No.	Value				Focus area	Selected factor	Actions to implement
85.	0	1	2	3	Monochronic	Schedules	In monoc. team the schedules guiding the work, but in multi-cultural team the completion is highlighted
86.	0	1	2	3		Division	In monoc. team the members are attorneys of divisions, but in multicultural team individual knowledge is in the core
87.	0	1	2	3		Accuracy	In monoc. team the information quality is set to be essential, but in multicultural team also collective agreement is valid
88.	0	1	2	3		Collaboration	In monoc. team divisional pers-pectives are important, but in multicultural team collaboration within the team is in the center
89.	0	1	2	3	Polychronic	People oriented	In polyc. team the decisions are based on the knowledge of individuals, but in multicultural team the information quality is also under discussion
90.	0	1	2	3		Flexible	In polyc. team the working is flexible, but in multicultural team some structures are used
91.	0	1	2	3		Completion	In polyc. team the target is in the core, but in multicultural team time schedules are used
92.	0	1	2	3		Co-operation	In polyc. team the working is based on co-operation inside the team, but multicultural team use wider perspectives
93.	0	1	2	3		Problem solving	In polyc. team the target is to solve problem, but with more multicultural team the develop-ping process itself is important
94.	0	1	2	3	Cultural differences	Power distance	Members from small power distance area have more freedom, members from large power distance area are supported by team hierarchy
95.	0	1	2	3		Uncertainty avoidance	Members with weak uncertainty avoidance can develop the solu-tion gradually, members with strong uncertainty avoidance are supported with milestones
96.	0	1	2	3		Organization type	The local organization model of members are seen in visualiza-tion of the team organization
97.	0	1	2	3		Organization model	The home organization model of each team members are discussed within the team
98.	0	1	2	3		Competitive advantages	Competitive advantages of cultural areas have been discussed within the team

Table 19. Team forming and operational factors.

No.	Value				Focus area	Selected factor	Actions to implement
99.	0	1	2	3	Team composition	Size	Team size has been selected according to the tasks of the team
100.	0	1	2	3		Cultural differences	The team composition and working methods are opened, discussed and agreed within the team
101.	0	1	2	3		Hierarchy	Team has named leader and if it has seen it necessary, also sub leaders
102.	0	1	2	3		Suitability of members	The criteria of membership are openly informed
103.	0	1	2	3		Selection of members	Selection criteria for selected members are generally available
104.	0	1	2	3	Working methods	Internal communication	Team members have suitable programs and tools for their collaboration, and they have been given suitable educations of those programs
105.	0	1	2	3		External communication	The team is agreed with the external organization how it will inform its proceedings
106.	0	1	2	3		Meeting frequency	Meeting frequency has been selected so, that it supports of task completion and keeps team members stick in the team work
107.	0	1	2	3		Way to meet	Team members can discuss formally as a regular basis and informally when they work with their sub tasks
108.	0	1	2	3		Communication spaces	The team has selected one main communication environment, which can fulfill the needs of formal and informal discussions

Table 20. Team leading and guiding factors.

No.	Value				Focus area	Selected factor	Actions to implement
109.	0	1	2	3	Leading the team	Coordination of teamwork	Team leader is recognized by the team and he or she personally fueling the discussion
110.	0	1	2	3		Information handling	Team leader is responsible that there is no information asymmetry between the team members and between the team and the organization
111.	0	1	2	3		Reporting	Team leader ensures that team will reporting its status and findings according to agreed reporting schedule
112.	0	1	2	3		Seeking the status	Team leader keeps the company organization up to date about team work and searches valuable tasks for the team for ensure valuable results for the company
113.	0	1	2	3	Guiding the team	Respect	Team hasn't designed too tightly fixed activities, which make possible to develop teamwork according to team wishes
114.	0	1	2	3		Lead from inside	Team leader is one of the team members and searching new ideas from the other teams
115.	0	1	2	3		Open doors	Team is possible to expand according to team development and when new professional are hired
116.	0	1	2	3		Transparency	Formal meetings are the arena, where the team will discuss and agree what information is given to the organization, but the team leader follows also the subgroup discussions
117.	0	1	2	3		Meaning > value > status	Team values are clear for the team as well as to the organization, they are in the written form and they support the teamwork accordingly
118.	0	1	2	3		Grouping > discussion	Subgroups are formed and informed before the discussion about the topic
119.	0	1	2	3		Listening	Regular surveys has been arranged within the team for its members feelings and wishes concerning the teamwork

Table 21. Company factors.

No.	Value				Focus area	Selected factor	Actions to implement
120.	0	1	2	3	Strategic	Values	The team values are according to the company values
121.	0	1	2	3		Vision	The team goals and targets supports the company vison
122.	0	1	2	3		Mission	The team mission is aligned with the company mission and it is clear for the team
123.	0	1	2	3		Goals	The team has strategic goals which are developed from the goals of the company
124.	0	1	2	3		Targets	Team targets are developed from the company targets and are measurable
125.	0	1	2	3		Plans	Action plans of the team are realistic and approved in the company level
126.	0	1	2	3	Structural	Corporate level	If necessary, the team has been included in the strategic plans in the corporate level
127.	0	1	2	3		Divisional level	The team and its targets have been included in the divisional plans
128.	0	1	2	3		Products groups	The product groups have been informed about the team and its tasks and in some cases are also responsible about the teams
129.	0	1	2	3		Regional organizations	The regional organizations have been involved in the team formation
130.	0	1	2	3		Product homes	The product homes have been key players or at least informed about the team
131.	0	1	2	3		Support functions	Support functions have been informed about the team
132.	0	1	2	3	Network	Administrations	The team connections to administration are clear
133.	0	1	2	3		Co-supplies	The team connections to co-supplies have been agreed with the management
134.	0	1	2	3		Consultants	The team connections to the consultants have been agreed with the appropriate functions
135.	0	1	2	3		Suppliers	The team connections to suppliers have been agreed with the purchasing
136.	0	1	2	3		Buyers	The sales have been informed about the team developments
137.	0	1	2	3		Institutes	The team connections to the institutes have been agreed with the appropriate functions
138.	0	1	2	3		Competitors	The sales have been informed about the team targets
139.	0	1	2	3		Distributors	Possible distributors have been informed about the team

Table 22. Company's unique operational, cultural and situational factors.

No.	Value				Focus area	Selected factor	Actions to implement
140.	0	1	2	3	Operational	Centered knowledge	If knowledge has been centralized, the local professionals have been noted
141.	0	1	2	3		Distributed knowledge	Professionals from global locations are noted
142.	0	1	2	3		Programs in use	Programs in use have been listed and their usability has been clarified
143.	0	1	2	3		Programs needed	If needed, new programs have been evaluated and selected
144.	0	1	2	3		Who, what, when	Working methods have been described and informed inside team as well as to organization
145.	0	1	2	3		Expectations	Stakeholders have been interviewed and their expectations noted
146.	0	1	2	3	Cultural	Global	Team structure and operating model suit in to company global organization, operations and culture
147.	0	1	2	3		Regional	Team structure and operating model suit into regional organizations and operations
148.	0	1	2	3		Country	Team structure and operating model suit into countries organizations, operations and cultures
149.	0	1	2	3		Local	Team structure and operating model suit into local company organization and operations
150.	0	1	2	3	Situational	Budget	Team budget has been taken in to account in global as well as local level
151.	0	1	2	3		Time	Supervisors in all locations have been informed about the team and its targets as well as needed hours
152.	0	1	2	3		Mutual	The team as well as its goals and targets have been included in some level of the company strategic plans

6.3 General notes on the formed tool

The innovation community tool, which is formed as a collection of tables, is useful for the organization, when it is planning the community and its operations as well as for the community itself when it evaluates its situation and plans its further steps. It ensures, that important factors from different point of views are taken into account. As described already earlier, the tables can be used as separate checklists as well as to calculate probabilities of success for one specific area or for the community. The results will variate depending on the community development status, but in that way the tool will guide the organization or the community itself within the development of the community.

The tool was formed by focusing large multinational or global organizations, but it can be used also in a smaller scale. Some local companies have already a multicultural organization, when companies, especially in high technology areas try to reach best possible experts worldwide. Also, it is more and more usual, that the expertise of companies is dispersed in its network and in that way easily in many different countries. And it is anyway useful to the local companies to plan the team forming by thinking the company's future needs or at least because the investment of the teamwork is an economically significant decision.

When measuring the community by using the presented tool, it is good to remember, that the results are highly dependent on truthful answers. When evaluating the situation of each factor, it is good to understand that at every point, which is not yet done properly, there are important findings for the future. In that way, the community development is a continuous but also a rewarding task for its members and for the organization.

7 THEMATIC INTERVIEWS

The evaluation of the construction is one essential part of the methodology of constructive research. This chapter presents the design and implementation of thematic interviews and highlights the issues which rose up during the interviews. Some important findings from those interviews are collected at the end of the chapter. It is also discussed which kind of further actions are needed when developing the innovation community tool further on to its final and more usable form.

7.1 Planning the interviews

The developed innovation community tool, which is constructed in the form on ten checklists, was also evaluated with thematic interviews. When planning the interviews, it wasn't considered important to formulate questions, which might have been used to ensure the selected areas presented on theoretical background. This was because they have been chosen and justified already in the beginning of this study. The hypothesis of this study is already partly proven by a developed tool, which indicated, that different theories and models around this theme are possible to be combined and presented as a practical level. According to the methodology of a constructive research, the main area to be evaluated is the construction and in this case, it is the constructed tool. Because the tool itself is quite large, it wasn't seen possible and not even necessary to discuss all 152 factors during interviews. Those factors can be developed, if necessary, when the companies start to use the tool and collect experiences. The selected ten key areas will be presented, and some examples of factors will be given. This might rise questions of important missing areas or factors, but also test the hypothesis about combining theories and models. In the end, the gradual handling of the topic was chosen as an interview strategy, starting from the basics of work and ending with the evaluation of the actual tool's usability and development needs.

The thematic interviews were put into practice with five employees who work in ANDRITZ service business area. Two of them have led virtual teams, which have been formed as communities of professionals of their own field and they have experiences of managing and directing of virtual teamwork as well as challenges of adapting the objectives of the team and company expectations. Three interviewees had different experiences of being team members in global teams or communities. Those teams have been project teams, highly specialized technology communities and developing teams. During the interviews the interviewer sought to observe and take notes of the factors raised by the interviewees, which could have an impact on the tool and give some ideas for its further development needs.

7.2 Interviews and remarkable findings

In the beginning of the interviews the background of the study was presented and in that way all interviewees had an idea of the subject. Additionally, the structure of the theoretical background and its different areas were explained. With that information the tool forming process was able to understand. It was made by running through all ten key areas presented in chapter 5. During that presentation some examples were picked up in the discussion to clarify the idea between the theoretical background and selected important factors. Within the presentation of actual tool, the idea of checklists, the idea of forming all selected factors in to actions and their valuation were explained. The key questions guiding the discussions were:

1. Is there a need of this kind of tool?
2. Is the tool understandable and usable?
3. How can the tool be developed further on?

All interviewees had faced problems with their teams during their career. For example, problems had been caused by lack of leadership inside the team, guiding that was too strong from outside of the team, missing focus of the team, dominated persons in the team and lack of time for the teamwork. It became quite clear that

there is a need for simple instructions for team or community planning and developing. Also, the general message from all interviewees was that the topic is interesting. Most of the interviewees said that looking the group forming from different perspectives is anyway a good idea.

The tool itself and its usability generated more comments. Dividing the tool in the multiple parts which present different areas of the topic seems to make it more understandable. The clear message, which supported this conclusion was that all interviewees are capable to evaluate the tool after only short introduction. This also supports the hypothesis, that combining of theories and models is possible and when they are developed in the practical level they can be used efficiently in the evaluation of community of professionals. Many interviewees speculated the question of who will use the tool. Three different perspectives emerged in these discussions. First was that new team leaders might need support in their work and the tool helps in that situation. Second and more common comment was, that the tool gets you consider different perspectives more carefully, whether you are new or more experienced person. Third comment was that an experienced team or community worker can easily get stuck in the old ways of working, which is good to question from time to time.

The presented ten key areas or examples of some specific factors and actions connected to them didn't give any new perspectives or ideas which should be noted. The key areas seemed to cover main topics which interviewees considered important according to their knowledge. In some discussions also noticed, that the tool is already so large, that widening it will risk the usability of the tool. That comment should be considered when developing the tool further on.

The valuation and the valuation criteria also created lots of discussion. Firstly, according to the interviewees, the valuation of four stages was suitable in this case. One interviewee also pointed out that this would reduce the compromise effect (see chapter 6.1). Interviewees agree, that in this way the valuation is also quite easy and different persons might use the same mental scale during their valuation. With this

came up the next and more difficult issue. The person who will make the valuation has his or her own way to analyze different factors and presented actions at least with those factors which aren't so concrete but based on opinion. Also, if the result of the valuation has some effect on the community's or its leader's appreciation or reward, that might have an effect on the valuation made by community or its leader. Comparing the results of valuations between the communities is not always possible if the valuations are made by different persons. Therefore, it is necessary, that the valuations are made by same person or there is at least one person who participates in all valuations. Because of wide range of factors, the valuation might be difficult for persons who might know the company, but don't exactly know the factors that are connected to the community or persons who might know the community but not the situation of the company. When valuating the factors that are connected to company level strategies and actions, it is also important to highlight what the company is. It needs to be agreed case by case, if the person is thinking and evaluating the local company in some specific country or the whole global corporation. Those decisions need to be considered also when comparing evaluation results made by different regions or locations.

When discussing about the needs for further developments, some remarkable comments rose up. One was, that short guidance for the tool and valuation is good to prepare. This guidance should also include general information of the issues for which the tool is designed and in what kind of situation it is planned to use. One interviewee thought, that the checklists with the guidance weren't enough for people, who don't have deeper background information of the topic. He proposed, that a short explanation of each key area might help to understand the subject better and ensure proper evaluations. The explanation should include reasoning why this area is selected and what is behind those factors. Other development needs did not come up.

7.3 Innovation community tool development according to findings

According to interviews the tool is usable with its ten checklists of different key areas. Also, valuation from zero to three was considered appropriate scale. Theoretical background, ten key areas and discussed factors didn't create any remarkable comments during interviews. Main discussion during the interviews was held around three topics: who will use the tool, how the valuation should be done and what kinds of instructions are needed.

The conclusion was that the additional instructions are needed because the tool itself isn't clear enough for those users who don't have enough knowledge about its background. In those instructions it is necessary to describe who can use the tool, in which kinds of situations and what is the background of each key area. Also, the guidelines for valuation are possible and necessary to present.

The instructions were developed according to previous notes and they can be found as an attachment of this study. The finalized tool with ten checklists is also attached. The instructions and checklists together form the ultimate tool for designing, guiding and developing the virtual communities of professionals. In that way the tool can be seen as a practically usable result of this study, which can be used in different companies and innovation communities.

8 CONCLUSIONS

In this chapter the conclusions and evaluations of the results of the study are collected. The construction of the study is presented shortly in the beginning. This has been done to summarize, how the study is developed from a theory to the final and practical innovation community tool. With that information it is possible to understand how the results are reached. The results are handled so that the main findings and answers to research questions are presented first. This begins with theoretical and practical implications, as they are important parts and the basis of which the significance of the study can be assessed. In the end of the chapter the limitations and the validity of the results as well as recommendations for future research are collected.

8.1 Construction of the study

As described in the background of the study, related theories around the topic haven't been researched together and the overall picture is hard to notice. By bringing different theories and models together in the theoretical part, the current state and the most important findings of the related features were possible to see. With that information further evaluation of the most important factors, which will have effect on the virtual community, was possible.

This study is based on known and recognized theories and models, which will have effects on planning, constructing and developing the virtual community of professionals as well as to the company-specific factors that form the working environment for the virtual communities. In addition to the known theories the recent surveys highlight the current status of the topic and rise healthy questions within traditionally organized companies. The theories and models have been selected so, that they cover related areas around the topic which has been considered important. Since the topic is limited to the communities composed of highly skilled professionals, three main considerations have been selected, which are knowledge, teamwork and company itself.

The community of practice is handled relatively deeply, because it is a model that already covers the community planning, formulation and developing quite widely. But as described in chapter 5.7, it has some limitations from company's and cultural point of views. Despite these, that model gave some takeaways for community forming, operating and leading.

The service unit of the target company is one example of a group, which has been grown into global scale and where knowledge has been spread to different regions and where some modification of knowledge management is needed. The pre-questionnaire in the target company service business area supports that phenomenon. Employees from different regions expect better information sharing and co-operation at the global scale. Other companies might find out slightly different expectations from their employees, but those have been covered by looking at the situation from many different perspectives when collecting important factors from the background theory and when forming the tool with different actions to implement.

The tool forming was a two-step process. When collecting the factors, which will have effect on the virtual team of professionals, ten key areas have been identified. The areas have been formulated not only by different themes, but also by thinking about usability of the final tool. The final tool is planned to be a group of actions around the selected themes and those actions are organized in a form of checklist. But long checklists are easily tiresome, and users are unable to maintain accuracy until the end. That is one reason why different themes are divided into multiple key areas. Those different key areas can also use similar factor names. In that way the names of factors are also preserved understandable. In the second step, collected factors have been translated in the form of actions. With those actions, the selected factor has been considered within the company and when designing the virtual community of professionals. How well the factor was noticed is possible to evaluate and valuate. The valuation is better than an opinion of this kind of complicated issue.

Thematic interviews were used to test the need of the tool, its usability and development needs. Interviewees were selected so, that they have personal experiences from virtual teams and communities of professionals in the global industrial environment. The target was, that from those interviews it is possible to pick up some interesting and valuable comments as well as ideas that are needed before the tool will be ready to use. Findings supported the idea for developing this kind of tool and gave also clear message, that additional instructions are needed. After all the final and ultimate innovation community tool with necessary instructions is written out and attached in the study.

8.2 Main findings of the study

The goal of this study was to develop a tool for global companies for planning their virtual community of professionals. That has been done by combining traditional theories of knowledge, innovation and exchange with the business of the company and its demands. A practical innovation community tool was developed with this combined information. The tool includes ten important key areas and totally 152 factors which have some effects on virtual innovation communities.

In the beginning of this study one main research question and three more specific sub questions were formed and presented to help to reach the ultimate goal of the study described above. The first sub question handles the assembly of the global community.

1. Which factors affect the assembly of the global community of professionals?

Assembly of the global team, group or community need to be considered carefully. It's not only professionalism which is the key to accept somebody to be a member of the innovation community and it's not a local company which selects all

members and gives all resources for the community. Building global operations needs multilevel co-operation and that if something is a challenge for any company.

In this study 152 factors have been recognized which affect to the global, and in most of the cases also virtual innovation communities of professionals. Those factors affect the assembly from company, community and member level. None of those levels can't ensure efficient community alone, they all have some important role in team composition and internal structure. It's impossible to say, which factors are the most important and which one is less important for the assembly. All companies are different and technology areas variate a lot. For that reason, connections and influences between different key areas and factors variate without clear causal relationship. This won't prevent assembling an efficient community. If some factors aren't appropriately implemented, some others can compensate them at least in partly. It is therefore appropriate to consider this as a set of key areas and try to find areas which need some more consideration. By using the tool as a checklist might have some positive effects to the assembly but calculating values in different key areas is a more efficient way to figure out problematic areas and their developing needs.

The assembly is only one area that needs some consideration when designing and evaluating the virtual community of professionals. How the community behaves, and acts is a quite important area. The second sub question concerned this:

2. What kinds of working methods should be defined for the global community of professionals?

Working methods play a crucial role in global communities, especially because working has to happen in a virtual environment. Long distances, time differences and cultural differences are always present in the global work. Those unique features together with normal challenges for the community cause so many different things to consider, that their management for an individual person or group can even be impossible without proper tools.

This study doesn't give a straight and universal answer for the question about working methods of global community of professionals. Instead it opens the topic with large variety of factors and practical actions to implement, when defining those working methods. The topic has a tight connection to company employees as persons with their local cultures. The collected factors open, even for highly technology-oriented people, a fairway to understand those different people and their behaving. After understanding why people are behaving like they do and what they are expecting for, it's possible to form best possible working methods for the community and discuss and agree those topics which can't be made optimally according to all members of the community. This wide understanding together with normal factors which are connected to knowledge creation, management and teamwork, enables good conditions for effective teamwork.

Especially large organizations have to have some rules, just like in our society, how people should work together and how different tasks should be managed. A global innovation community which is formed inside global organization needs some control as well. The third sub question deals with this phenomenon.

3. How should the global network of professionals be controlled?

As mentioned already above, a global community which is formed in a large company can't act only how it wants. A community needs to follow common rules, perform the task which is given to it and inform what it has done. Those topics are the main problems with the model of community of practice, which will form its rules by itself and don't have so well-defined task and structure that large organizations expect, and some cultures require.

In this study, many factors that have some influences on the ways in which to lead and guide the community, as well as how the community will interact with the organization, have been evaluated. The innovation community of the company is only one group of people who needs to have some value for the company but also for the community and its members. With a developed tool, it is possible to notice

necessary factors and evaluate and implement corresponding actions to ensure good control. This doesn't mean requirements alone for the community but also for the local organization and for the whole company. Like the assembly and the working methods, also the control has to be according to the company. And in that way the company specific factors are essential to be evaluated and discussed when planning the controlling methods of the community.

The main question was formed according to the objective of the study. By the answers of the three sub questions it is possible to evaluate the answer for the main question. The question was:

> What kind of network of professionals based on a global presence and their method of operation, is suited for the international and multicultural business?

As it is possible to see with presented answers for the sub questions, the community of professionals in the global company environment needs exceptionally broad thinking from the people who are involved to the task. It is a so complex task, that even when the totality has been divided in different themes, universal answers and guidance's can't be offered. Because of that, for the people, who have been involved of the task has been developed a proper tool, which can be used in different companies, for different needs and with different ways when designing and developing innovation communities in global technology companies.

8.3 Theoretical implications

The first part of the hypothesis has been already proven by building the innovation community tool which includes important aspects from several different theories and models. In that way the final solution or construction is also suitable in the theoretical framework of the study and it has tight theoretical connections. The tool includes theories and models of knowledge, knowledge development and management, team development, team efficiency and exchange, virtual team,

operational and structural requirements from the company as well as the model of community of practice. Results from thematic interviews also support the hypothesis, that if previous theories and models are developed to the practical level, they are also easy to understand and exploit. As far as multiple theories and models which have some influences on the topic are possible to combine and with that create new information of connections and dependences between them, this also highlights the importance of dialog between different disciplines.

The innovation community tool was tested with thematic interviews within the target company. Despite this, it is clear, that the tool and the hypothesis are also feasible for other companies and industries. The factors which are collected from the theoretical framework are universal in their original context and they can be seen universal also in this new context, because their original meanings have been retained. The tool has been developed for globally or at least internationally operating companies, but it can be seen feasible also for other internationally acting teams or communities of professionals, which will face similar challenges with different cultures and other related topics.

8.4 Practical implications

The complete innovation community tool with instructions combines different theories and models in the propriate way, that companies can build efficient communities of professionals and those communities can be developed further on. As a practical implication, it will rise the success rate of forming as well as developing of those groups. It will help the company, the organization, the managers and the community itself to keep in mind different perspectives around the topic and help to form the company strategic process with right kind of actions. The tool with instructions is attached to this thesis and is therefore easy to implement.

The innovation community tool also guides the discussion around the topic from different opinions to more a structured way of thinking. It will reduce cultural

collisions within the company and the innovation community by opening the discussion of cultural differences in a rational way. The tool has an effect to different levels from management to community member. For management it will give guidance how to build right kind of atmosphere and allocate right kind of resources for the professional working as well as for the community how to form the working methods and communication between the main organization.

In addition, the study combines different theories as well as the company's practices, which concretizes the utilization of theoretical information. In that way it raises the importance of research work when determining the strategic alignments and measures of the company. The study at least partially closes also the research gap, which is found to be between different disciplines, when previous studies have been executed in a slightly narrow-minded manner.

8.5 Limitations and validity of the results

The study was limited to cover companies which have at least international or in more complicated situation global operations and which are operating in the industry of technology. But because the factors which are collected have been universal in their original context and their original meanings have been retained, the tool can be seen valid also for other internationally acting teams or communities of professionals, which will face similar challenges with different cultures and other related topics.

The theoretical part is constructed by using only some selected areas around the topic that are found to have some effect on the innovation communities. Three main considerations have been selected: knowledge, teamwork and company needs. Naturally there are also many areas that could be considered more deeply, like human psychology or information flow between different actors, but those were not considered as important as selected areas, which can be recognized easily and because of that also evaluated within different companies. Anyway, that limitation to only few areas, has some effects on the validity of the results. Different

companies might have company specific and industry area specific topics or factors which are mandatory and should be noted. But on the other hand, if adding those specific needs, it might reduce the wide range usability of the tool.

The selected main literature and theories of the study are widely recognized, and they are supported by latest surveys and models. But as seen for example in the chapter 2.1, where three different kind of classifications of the knowledge are presented, most areas within the theoretical part have several approaches too and, in that way, also different emphases. At this point, the researcher's selections have had some effects on the factors and as such, it has created uncertainty for the validity of the results.

The innovation community tool has formed actions which are planned to reflect the situation of a specific factor within the company. Those actions are formed with the theoretical framework, but also according to researched knowledge. Additionally, those factors and actions weren't tested comprehensively during the thematic interviews. That is good to notice when using the tool and if necessary, those actions should be developed according to the company.

8.6 Recommendations for future research

From the theoretical point of view, the theoretical background of the study could be evaluated more widely and deeply. All cultures have different personalities and it might be interesting to analyze the behavior of the community members more widely, compared to what has been done in this thesis. This could be done, for example, by concentrating to theories of social behaving and creativity of humans. Majority of the results and the tool itself is already usable also for small and medium size companies (SME). One area that might improve the usability of the results into smaller scale companies would be to add factors which will include characteristics from administration and structure of SME:s.

Because the innovation community tool was only partially tested with thematic interviews, it will need more evaluation. The validity of theoretical background and its coverage needs to be confirmed over a time. Also the selected factors and especially the presented actions of each factors need to be evaluated more deeply. This could be done with additional interviews or by collecting experiences when using the tool. In that point it should be decided whether to develop a tool that is still widely usable in different companies or multiple tools which are more company or industry area specific.

9 SUMMARY

In global business, those employees who work in companies' sales units and operate close to the customer area, regardless of technology, are more conscious of their customers' needs and their local conditions than employees who work only in one location. This is one example of potential of expertise which is not always exploited comprehensively by companies. These regionally operating and professional people should also be a part of companies' professional network and innovation communities. This kind of international and often virtual work has been studied quite lightly compared to traditional teamwork which happens face to face (Berry 2011, p. 202). In studies of virtual teamwork, within global communities of professionals the focus has mainly been on exploiting existing technology, management, cultural differences and to some degree communication, the role of the individual, the life cycle of the team and different team types (for example Sivunen 2007, p. 16; Gibbs, Sivunen & Boyraz 2017, p. 590-599). The research as a whole has been carried out in a slightly narrow-minded manner from the direction of the researcher's own discipline only and with emphasis on the perception of the current state of this relatively young phenomenon.

A hypothesis of this study was that combining different theories and models around the selected theme is possible and together they can provide a better starting point for the activities of global expert groups. When applied to the practical level, this new model will also improve the usability of already known theories and models. The area is broad and it has been important to figure out which are the most important topics to consider**.** This study approached virtual community building, working methods, guiding and connecting to other organizations by combining traditional theories of knowledge, innovation, and exchange with the business of the company and its demands. The selected main literature and theories of the study are widely recognized, and they are supported by latest surveys and models. Building the theoretical background with all of that information has been a challenging and time consuming, but at the same time rewarding mission. As a result, it has been composed tight but in the same time broad overview of the theme.

From that theoretical background, the most important factors have been selected, which have some influence on the virtual innovation community, and finally, the actual tool with necessary actions and valuation possibility is formed. The developed innovation community tool which is constructed in the form on ten checklists was also evaluated with thematic interviews. The main finding from the interviews was, that the additional instructions are needed because the tool itself isn't clear enough for those users who don't have enough knowledge about its background. The instructions were developed, and they can be found as an attachment of this study with finalized tool with ten checklists. The instructions and checklists together form the ultimate tool for designing, guiding and developing the virtual innovation communities. In that way the tool can be seen as a practically usable result of this study, which can be used in different companies and innovation communities.

As it has been found out in this study, that building the global community of professionals is a complex and multilevel issue. It is easy to understand, that it is an attractive way to proceed by being straightforward when building those virtually operating groups. Those who planned the community building may not have had enough knowledge of all features which should be recognized. On the other hand, if they had, it would still have been difficult to understand deeply enough those challenges which organization will face within global environment. Many time people in management level are business oriented and fixed in the daily routines. It is of course important to understand business and its mechanisms also when planning the virtual communities of professionals, but that isn't the whole picture. This study has given opportunity for managers and team leaders as well as community members to see the whole picture and additionally a practical tool how to handle different issues in the task. The topic has been considered interesting and important as well as the tool is evaluated to be enough practical and therefore ready to implement.

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INNOVATION COMMUNITY TOOL

Background and use of the tool

The innovation community tool was developed for global companies for planning or developing their virtual community of professionals. That has been made by combining traditional theories of knowledge, innovation, and exchange with the business of the company and its demands. A practical tool was developed with this combined information. The tool includes ten important key areas formed as a collection of tables and totally 152 factors which have some effects on innovation communities. Tables can be used as separate checklists as well as to calculate probabilities of success for one specific area or for the team as a whole. Results will variate depending on the team development status, but in that way the tool will guide the organization or the team itself within the development of the team.

The tool was formed by focusing large multinational or global organizations, but it can be used also in a smaller scale. Some local companies have already a multicultural organization, when companies, especially in high technology areas try to reach best possible experts worldwide. Also it is more and more usual, that the expertise of companies is dispersed in its network and in that way easily in many different countries. And it is anyway useful to the local companies to plan the team forming by thinking the company's future needs or at least because the investment of the teamwork is an economically significant decision.

When measuring the team by using the presented tool, it is good to remember, that results are highly dependent on truthful answers. When evaluating the situation of each factor, it is good to understand that at every points which are not yet made properly have actually important findings for the team future. In that way, the team development is a continuous but also a rewarding task for the team members and for the organization.

(To be continued)

Background of key areas

All ten tables of the ten key areas have been collected to the next ten pages. In the tables, the factors have an order number for better identification when discussing about the specific topic. Other columns include the value of the factor from zero to three, focus area, selected factor and actions to implement. The descriptions of the formed tables are:

- Key area 1: Company knowledge factors. Different features of knowledge and clarification of what kind of company environment is needed when creating new knowledge.
- Key area 2: Company's knowledge management factors. Features of learning organization and considerations when planning knowledge sharing and different support systems.
- Key area 3: Team factors. Features of the team, development stages of the team and basic principles of teamwork.
- Key area 4: Team exchange factors. The most important exchange instruments of the company and the team as well as their practical meanings.
- Key area 5: Virtual team factors. Additional features of the virtual team or community and how to handle those unique features within the team and its operations.
- Key area 6: Cultural factors. How to handle persons from monochronic and polychronic cultures in general and the most important features which need to be understood within the multicultural communities of professionals.
- Key area 7: Team forming and operational factors. Main features which have to be clear, when planning the team and its communication.
- Key area 8: Team leading and guiding factors. List of the features which are important for the team leader as well as factors which will have an important role when developing the team.

(To be continued)

- Key area 9: Company factors. A description how company's strategic process can be combined with virtual community of professionals, how the company structure can be seen in the community and how company network will affect the community.
- Key area 10: Company's unique operational, cultural and situational factors. As far as all companies are different, their most important unique features, which have to match with the community and its composition are collected and explained in the table.

Valuation of factors

With valuation it is possible to calculate a success factor of each key area or of the innovation community as a whole. Calculation is possible to perform before forming a group, but also during the lifetime of the group when analyzing the development of the team. The values can be selected as follows:

0 Hasn't/haven't been taken into account or not known
1 Has/have been taken into account, but actions hardly implemented
2 Has/have been taken into account and actions largely implemented
3 Has/have been taken into account and fully implemented or no need to implement

(To be continued)

Key area 1. Company knowledge factors.

No.	Value				Focus area	Selected factor	Actions to implement
1.	0	1	2	3	Importance	Valuable	The economic value of knowledge is defined
2.	0	1	2	3		Usable	New knowledge is usable, and it is also actively exploited
3.	0	1	2	3	Features	Present	Present knowledge is defined and systematically collected
4.	0	1	2	3		New	New innovation and knowledge is actively searched and saved
5.	0	1	2	3		Tacit	Tacit knowledge of employees and organization is actively gathered with programs
6.	0	1	2	3		Explicit	Explicit knowledge is available and easily reachable
7.	0	1	2	3	Forms	Experimental	Employees tacit skills are recognized and noticed in the task definition
8.	0	1	2	3		Routine	Tacit knowledge is seen as a practical daily routines
9.	0	1	2	3		Conceptual	Products, services and brand are visualized and presented
10.	0	1	2	3		Systemic	Company has structured methods to collect product documentation
11.	0	1	2	3	Requirements	Risk-taking	Company is anxious to develop new products and services as well as to reject unprofitable ones
12.	0	1	2	3		Flexibility	Company has capability to change its structures according to the needs of new knowledge
13.	0	1	2	3		Atmosphere	Company motivating its employees to create new innovations and knowledge
14.	0	1	2	3		Focusing	Company has selected industrial and technology areas
15.	0	1	2	3		Combining	Company actively combining tacit, explicit and new knowledge between its units
16.	0	1	2	3	Creation	Internalization	Organization is more focused to learn new ways of working (3) or building its operations based only on existing routines (0)
17.	0	1	2	3		Socialization	Organization actively comparing its own working methods to other companies and isn't fixed only own learning
18.	0	1	2	3		Externalization	Organization spread selected working methods of individuals to the whole organization
19.	0	1	2	3		Combination	Organization has discussion forum or other similar tools for cross functional and cross divisional knowledge sharing

(To be continued)

Key area 2. Company's knowledge management factors.

No.	Value				Focus area	Selected factor	Actions to implement
20.	0	1	2	3	Learning organization	Self-management	Teams of professionals have autonomy in their working
21.	0	1	2	3		Questioning	In the company, current knowledge and authorities are possible to challenge
22.	0	1	2	3		Common goals	Company goals are modified to goals of teams of professionals
23.	0	1	2	3		Learning as a community	Equality is important in the company and in its teams
24.	0	1	2	3		Interrelation between things	Company has ability to gather enough information before decision
25.	0	1	2	3	Knowledge transfer	Innovation	Company has knowledge and innovation storage system
26.	0	1	2	3		Channels	Company organizes knowledge sharing to its employees
27.	0	1	2	3		Time	Company shares its knowledge regularly or even online
28.	0	1	2	3		Structure	Company has visualized its knowledge structure
29.	0	1	2	3	Knowledge diffusion	Innovators	Innovators are used for speed up knowledge developing
30.	0	1	2	3		Early adopters	Early adopter are used for finalizing products and plans
31.	0	1	2	3		Early majority	Early majority is used to transfer the knowledge
32.	0	1	2	3		Late majority	Late majority is used to collect information about the customer reactions and expectations
33.	0	1	2	3		Laggards	Laggards are used to challenge new and existing offerings
34.	0	1	2	3	Knowledge management	Recognize	Knowledge is actively identified and recognized
35.	0	1	2	3		Make visible	New innovations and knowledge are visualized
36.	0	1	2	3		Make available	Company inform its whole network about new knowledge
37.	0	1	2	3		Adopt	Company follows teamwork and adoption of the new knowledge
38.	0	1	2	3	IT systems	Creation	Data mining programs are in use for combining knowledge
39.	0	1	2	3		Storing	Knowledge data storing systems are defined and adopted
40.	0	1	2	3		Transfer	Electronic info screens, forums for discussions and knowledge storing systems are available for company employees
41.	0	1	2	3		Exploitation	Knowledge systems are available globally and new knowledge is actively adapted in to electronic tools

(To be continued)

Key area 3. Team factors.

No.	Value				Focus area	Selected factor	Actions to implement
42.	0	1	2	3	Team Features	Multiple members	Team members are selected inside the organization or its core network
43.	0	1	2	3		Independent task	The team tasks are unique and informed to organization
44.	0	1	2	3		Common goal	The goals of the team are known within the team and organization
45.	0	1	2	3		Interaction inside	Working methods have been described and informed inside team as well as to organization
46.	0	1	2	3		Tasks are dependent	All team tasks are connected to the team core competencies
47.	0	1	2	3		Handling boundaries	Communication between the team and the organization is described and visualized
48.	0	1	2	3		Inside organization	The team is formed inside the organization and it acts as a part of the organization
49.	0	1	2	3	Team development	Team formation	The team is already passed the team formation phase
50.	0	1	2	3		Task compilation	The team already has known members and defined tasks
51.	0	1	2	3		Role compilation	The roles of team members are already formed and communication between its members has started
52.	0	1	2	3		Team compilation	Team has reached level, where it works effectively and is ready to take on new tasks and expand their expertise
53.	0	1	2	3	Team behavior	Fixing to most important	Team targets are carefully selected, and all members have possibility to participate in the work
54.	0	1	2	3		Individual targets	Team members individual situation as well as personal targets in their own organization are recognized
55.	0	1	2	3		Clear communication	The communication within the team is open for all and team members respond quickly
56.	0	1	2	3		Rational working	Working of the team is planned, meetings are regular, and decisions have been recorded
57.	0	1	2	3		Openness	The team has a positive and open minded atmosphere

(To be continued)

Key area 4. Team exchange factors.

No.	Value				Focus area	Selected factor	Actions to implement
58.	0	1	2	3	Member exchange	Citizenship	Team members support the company in the strategic plans and actions of the company
59.	0	1	2	3		Performance	Team members have some motivation for the team work and they are goal oriented
60.	0	1	2	3		Attendance	Team members like to participate team meetings and discussions
61.	0	1	2	3		Membership	Team members behave like a good member and support the open minded discussion
62.	0	1	2	3		Loyalty	Team members have loyalty for the company and the team itself
63.	0	1	2	3		Positive attitude	Team members have a positive attitude and it is also visible to the organization
64.	0	1	2	3	Company exchange	Support	The company offers to the team members time and mutual support
65.	0	1	2	3		Security	The company clearly and concretely ranks the team work as valuable and important than the operational short term tasks
66.	0	1	2	3		Advancement	The company offers team members different and interesting career paths
67.	0	1	2	3		Pay	The salary of team members is comparable for the other specialists salaries
68.	0	1	2	3		Benefits	The company offers to the team members opportunity to educations and networking
69.	0	1	2	3		Employment	The company is committed to support long-term work of the team
70.	0	1	2	3		Social identity	The company gives the team a status within the company network and recommends the network to co-operating actively with the team
71.	0	1	2	3		Job assignment	The local organizations offer team members time and tools for the efficient working
72.	0	1	2	3		Information	The company offers to the team and its members extensive access to the information needed

(To be continued)

Key area 5. Virtual team factors.

No.	Value				Focus area	Selected factor	Actions to implement
73.	0	1	2	3	Virtual team	Long distances	Long distances aren't obstacle the membership of the team
74.	0	1	2	3		Cultural differences	Cultural differences aren't obstacle the membership of the team
75.	0	1	2	3		Time differences	Time differences have taken in to account when teamwork is planned
76.	0	1	2	3		Communication	Team uses common language in all communication
77.	0	1	2	3		Large amount of information	Team has efficient tools for moving and storing large amounts of information
78.	0	1	2	3	Virtual team activity	Good communication	Friendly communication is highlighted to avoid misunderstandings
79.	0	1	2	3		Good co-operation	All members of the team are capable for teamwork and are capable to listen each other
80.	0	1	2	3		Consensus	In all cases good target is to reach consensus within the team
81.	0	1	2	3		Clear messaging	Target is to keep communication short and simple
82.	0	1	2	3		Working as a pair	Team working as a group, but to maintain activity, the work is also distributed to work pairs
83.	0	1	2	3		Versatile tools	Selected communication tools and their functions within the team and between the organization support openness
84.	0	1	2	3		Face to face meetings	Face to face meetings are planned to be possible, but they aren't the key factors for the success of the team

(To be continued)

Key area 6. Cultural factors.

No.	Value				Focus area	Selected factor	Actions to implement
85.	0	1	2	3	Monochronic	Schedules	In monoc. team the schedules guiding the work, but in multi-cultural team the completion is highlighted
86.	0	1	2	3		Division	In monoc. team the members are attorneys of divisions, but in multicultural team individual knowledge is in the core
87.	0	1	2	3		Accuracy	In monoc. team the information quality is set to be essential, but in multicultural team also collective agreement is valid
88.	0	1	2	3		Collaboration	In monoc. team divisional pers-pectives are important, but in multicultural team collaboration within the team is in the center
89.	0	1	2	3	Polychronic	People oriented	In polyc. team the decisions are based on the knowledge of individuals, but in multicultural team the information quality is also under discussion
90.	0	1	2	3		Flexible	In polyc. team the working is flexible, but in multicultural team some structures are used
91.	0	1	2	3		Completion	In polyc. team the target is in the core, but in multicultural team time schedules are used
92.	0	1	2	3		Co-operation	In polyc. team the working is based on co-operation inside the team, but multicultural team use wider perspectives
93.	0	1	2	3		Problem solving	In polyc. team the target is to solve problem, but with more multicultural team the develop-ping process itself is important
94.	0	1	2	3	Cultural differences	Power distance	Members from small power distance area have more freedom, members from large power distance area are supported by team hierarchy
95.	0	1	2	3		Uncertainty avoidance	Members with weak uncertainty avoidance can develop the solu-tion gradually, members with strong uncertainty avoidance are supported with milestones
96.	0	1	2	3		Organization type	The local organization model of members are seen in visualiza-tion of the team organization
97.	0	1	2	3		Organization model	The home organization model of each team members are discussed within the team
98.	0	1	2	3		Competitive advantages	Competitive advantages of cultural areas have been discussed within the team

(To be continued)

Key area 7. Team forming and operational factors.

No.	Value				Focus area	Selected factor	Actions to implement
99.	0	1	2	3	Team composition	Size	Team size has been selected according to the tasks of the team
100.	0	1	2	3		Cultural differences	The team composition and working methods are opened, discussed and agreed within the team
101.	0	1	2	3		Hierarchy	Team has named leader and if it has seen it necessary, also sub leaders
102.	0	1	2	3		Suitability of members	The criteria of membership are openly informed
103.	0	1	2	3		Selection of members	Selection criteria for selected members are generally available
104.	0	1	2	3	Working methods	Internal communication	Team members have suitable programs and tools for their collaboration, and they have been given suitable educations of those programs
105.	0	1	2	3		External communication	The team is agreed with the external organization how it will inform its proceedings
106.	0	1	2	3		Meeting frequency	Meeting frequency has been selected so, that it supports of task completion and keeps team members stick in the team work
107.	0	1	2	3		Way to meet	Team members can discuss formally as a regular basis and informally when they work with their sub tasks
108.	0	1	2	3		Communication spaces	The team has selected one main communication environment, which can fulfill the needs of formal and informal discussions

(To be continued)

Key area 8. Team leading and guiding factors.

No.	Value				Focus area	Selected factor	Actions to implement
109.	0	1	2	3	Leading the team	Coordination of teamwork	Team leader is recognized by the team and he or she personally fueling the discussion
110.	0	1	2	3		Information handling	Team leader is responsible that there is no information asymmetry between the team members and between the team and the organization
111.	0	1	2	3		Reporting	Team leader ensures that team will reporting its status and findings according to agreed reporting schedule
112.	0	1	2	3		Seeking the status	Team leader keeps the company organization up to date about team work and searches valuable tasks for the team for ensure valuable results for the company
113.	0	1	2	3	Guiding the team	Respect	Team hasn't designed too tightly fixed activities, which make possible to develop teamwork according to team wishes
114.	0	1	2	3		Lead from inside	Team leader is one of the team members and searching new ideas from the other teams
115.	0	1	2	3		Open doors	Team is possible to expand according to team development and when new professional are hired
116.	0	1	2	3		Transparency	Formal meetings are the arena, where the team will discuss and agree what information is given to the organization, but the team leader follows also the subgroup discussions
117.	0	1	2	3		Meaning > value > status	Team values are clear for the team as well as to the organization, they are in the written form and they support the teamwork accordingly
118.	0	1	2	3		Grouping > discussion	Subgroups are formed and informed before the discussion about the topic
119.	0	1	2	3		Listening	Regular surveys has been arranged within the team for its members feelings and wishes concerning the teamwork

(To be continued)

Key area 9. Company factors.

No.	Value				Focus area	Selected factor	Actions to implement
120.	0	1	2	3	Strategic	Values	The team values are according to the company values
121.	0	1	2	3		Vision	The team goals and targets supports the company vison
122.	0	1	2	3		Mission	The team mission is aligned with the company mission and it is clear for the team
123.	0	1	2	3		Goals	The team has strategic goals which are developed from the goals of the company
124.	0	1	2	3		Targets	Team targets are developed from the company targets and are measurable
125.	0	1	2	3		Plans	Action plans of the team are realistic and approved in the company level
126.	0	1	2	3	Structural	Corporate level	If necessary, the team has been included in the strategic plans in the corporate level
127.	0	1	2	3		Divisional level	The team and its targets have been included in the divisional plans
128.	0	1	2	3		Products groups	The product groups have been informed about the team and its tasks and in some cases are also responsible about the teams
129.	0	1	2	3		Regional organizations	The regional organizations have been involved in the team formation
130.	0	1	2	3		Product homes	The product homes have been key players or at least informed about the team
131.	0	1	2	3		Support functions	Support functions have been informed about the team
132.	0	1	2	3	Network	Administrations	The team connections to administration are clear
133.	0	1	2	3		Co-supplies	The team connections to co-supplies have been agreed with the management
134.	0	1	2	3		Consultants	The team connections to the consultants have been agreed with the appropriate functions
135.	0	1	2	3		Suppliers	The team connections to suppliers have been agreed with the purchasing
136.	0	1	2	3		Buyers	The sales have been informed about the team developments
137.	0	1	2	3		Institutes	The team connections to the institutes have been agreed with the appropriate functions
138.	0	1	2	3		Competitors	The sales have been informed about the team targets
139.	0	1	2	3		Distributors	Possible distributors have been informed about the team

(To be continued)

Key area 10. Company's unique operational, cultural and situational factors.

No.	Value				Focus area	Selected factor	Actions to implement
140.	0	1	2	3	Operational	Centered knowledge	If knowledge has been centralized, the local professionals have been noted
141.	0	1	2	3		Distributed knowledge	Professionals from global locations are noted
142.	0	1	2	3		Programs in use	Programs in use have been listed and their usability has been clarified
143.	0	1	2	3		Programs needed	If needed, new programs have been evaluated and selected
144.	0	1	2	3		Who, what, when	Working methods have been described and informed inside team as well as to organization
145.	0	1	2	3		Expectations	Stakeholders have been interviewed and their expectations noted
146.	0	1	2	3	Cultural	Global	Team structure and operating model suit in to company global organization, operations and culture
147.	0	1	2	3		Regional	Team structure and operating model suit into regional organizations and operations
148.	0	1	2	3		Country	Team structure and operating model suit into countries organizations, operations and cultures
149.	0	1	2	3		Local	Team structure and operating model suit into local company organization and operations
150.	0	1	2	3	Situational	Budget	Team budget has been taken in to account in global as well as local level
151.	0	1	2	3		Time	Supervisors in all locations have been informed about the team and its targets as well as needed hours
152.	0	1	2	3		Mutual	The team as well as its goals and targets have been included in some level of the company strategic plans