Aalto University
School of Business

Challenges of virtual and temporary project management - a case study

Logistics

Master's thesis

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Tutkimuksen tavoitteet

Matriisiorganisaatiot ja puhtaasti projektipohjaiset organisaatiot ovat yleistyneet sekä virtuaaliset projektitiimit ovat nykyisissä monikansallisissa yrityksissä arkipäivää. Projektityön ja virtuaalisten projektitiimien myötä myös projektitiimien väliaikaisuus on kasvanut. Tämä on merkinnyt myös projektipäälliköiden työn luonteen muuttumista. Enää ei välttämättä saavutakaan toimistolle ja juoda aamukahveja tiimin kanssa. Projektitiimeihin voidaan nykyään valita ihmiset paikasta riippumatta, osaamisensa tai muiden syiden takia. Väliaikaisuuden ansiosta projekteihin voidaan värvätä työtekijät projektiperusteisesti, jolloin on mahdollista optimoida projektitiimi parhaalla mahdollisella tavalla projektin tavoitteiden saavuttamiseksi. Yhä useampi projektitiimi on sekä virtuaalinen ja väliaikainen. Tutkimuksen tavoitteena on tutkia miten virtuaalisen projektin hallinnan haasteet muuttuvat kun väliaikaisuuden vaikutukset otetaan huomioon.

Kirjallisuuskatsaus ja metodologia

Koska virtuaalisen ja väliaikaisen projektihallinnan haasteita ei ole vielä kunnolla tutkittu, tämä tutkimus tekee laajan kirjallisuuskatsauksen virtuaalisen projektihallinnan haasteisiin ja peilaa neljää suurinta haastetta väliaikaisen organisaatioteorian neljään elementtiin. Tämä tutkimus rakentaa viitekehyksen näihin perustuen ja tämä tutkimusviitekehys toimii empiirisen tutkimuksen pohjana. Metodologiana tässä tutkimuksessa on laadullinen tapaustutkimus, joka suoritettiin haastattelemalla kohdeyrityksen projektihenkilöstöä.

Tulokset ja päätelmät

Tutkimuksessa havaittiin väliaikaisuuden vaikutus virtuaalisen projektin hallintaan. Riippuen haasteen laadusta, väliaikaisuudella oli erilainen vaikutus. Kommunikaation merkitys korostui ja muuttui tehtäväorientoituneeksi. Luottamus ihmisiin korvattiin projektipäällikön kontrollilla ja luottamuksen fokus siirtyi ihmisistä projektiin ja sen tuomaan muutokseen organisaatiossa.. Johtamisen hallintaan liittyvät haasteiden lähde oli niin ikään siirtynyt ihmisistä työtehtäviin ja projektin koordinoimiseen. Haasteet kulttuurieroihin liittyen oli kohdeyrityksessä vähäiset vahvan organisaatiokulttuurin ansiosta. Ainoastaan aika elementti näkyi uusien työtekijöiden tutustuttamisen muodossa. Tämä tutkimus keskittyi aikaisemman tutkimuksen vähäisyydestä johtuen tarkastelemaan haasteita vain yksittäin, vaikkakin vahva riippuvuus eri haasteiden välillä tuli ilmi tutkimuksen edetessä.

Avainsanat Projektihallinta, virtuaalisuus, väliaikaisuus, haasteet, laadullinen tutkimus

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Abstract of master's thesis

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ABSTRACT

Objectives of the Study

Matrix and project based organizations have increased their popularity and virtual project teams are common in today's multinational organizations. With project base work and virtual teams, also the temporality of project teams has increased. This has changed the challenges of project managers. Project teams can be assembled regardless of location of an employee allowing efficient resource pooling across the globe. Efficiency is also a driver for temporary teams. The project team can be pooled for filling the needs of a single project. The objective of this research is to study how the challenges of virtual project management change when the effects of temporality are taken into account.

Academic background and methodology

Because of scarcity of the research in the field of virtual and temporary projects, and that there is no framework existing to study the research field, this study built a research framework based on an extensive literature review of previous scientific work done in the field. The research framework combines the four most popular and sonorous challenges of virtual project management and mirrors them to the four concepts of the theory of temporary organization. This research framework act as the basis of the interviews giving them a coherent structure. The methodology in this thesis is qualitative single case study. The people from the case company interviewed for the thesis are all experienced in the management challenges of the virtual and temporary projects.

Findings and conclusions

The findings of the study are multifold. The study identified that the concept of the theory of temporary organization effects on the challenges of virtual project management. Depending on the challenge and the element of temporality, the effect differs. The role of communication was emphasized and more task orientated. Trust in people was replaced by control of the project manager and the focus of trust was transferred from people to project and the change that the project brought to the parent organization. Due to the strong organizational culture in the case company, findings regarding that challenge were limited. Only time had some effect in regards of new employees. This study focused, due to lack of prior research, on the challenges independently, although strong dependencies were identified between the challenges as the study continued.

Keywords keyword, keyword, keyword

ACKNOWLEDGEMENTS

To Ying, Lucas and Oliver. I did this because of you.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

In this chapter, I will introduce the thesis. First, I will introduce the reader to the background of the thesis. This will lead the reader to the research gap identified. After that, the research objective is stated. Last, after setting the research questions, I will go through the structure of the thesis.

1.1. Background

In recent decades, with the changes of business environment, working in virtual teams has become more common in various industries. Globalization and development of communication technologies have acted as the main drivers for a virtual way of working (Hertel et al., 2005; Kayworth and Leidner, 2000). This has changed also the weight of the challenges faced by projects managers compared to management of traditional projects. These challenges are often related physical boundaries, communication, cultural and time zone differences, coordination of task etc. (ibid.). Although the challenges of normal project management still exist, the new ways of working brings a new set of challenges and alters the old ones (ibid.).

The changes in the business environment also have led to an increase in project-based work in recent years and the profession of a project manager is becoming more popular (Schwalbe, 2007). The challenges related to a virtual way of working are well researched already in the literature but in the same time, temporality of the project teams has increased and the research of temporality has not been paid that much of an interest (Saunders and Ahuja, 2006). The same driver's globalization and development of technology have enabled the efficient pooling of resource from all around the world and/or the internal global organization. Nowadays, it is relatively easy to put together a temporary team from different locations for a project. Although there are some touch points to temporality in the literature related to virtual way of working, the research of the concept of temporality and its effects to virtual projects is still maturing (ibid.).

1.2. Research gap

Saunders and Ahuja (2006) state that research which combines the elements of virtuality and temporality in project management is still limited. The temporality of a team is not a well-researched area in science in comparison to project management or virtual project management. The theories of temporary organizations comes from project management science, where a project team is viewed as temporary organization. The theory of a temporary organization is based on four concepts: time, task, team and transition, which are reviewed, in this thesis (Lundin and Söderholm, 1994; Turner and Müller, 2003).

The research gap that this thesis tries to fill lies between virtual and temporal aspects of project managing. The fulfilment of the gap is done by mirroring already identified challenges of virtuality to the concepts of temporality proposed by the theory of temporary organizations. The thesis builds a research framework based on the main challenges of virtuality in project teams and reflects them to the four concepts of temporality introduced by Lundin and Söderholm (1995).

1.3. Research objective

This thesis will concentrate on the changes in project management challenges when shifting from traditional project management to situations where the project team is virtual and temporary. For example, communication scene differ when the project team is physically scattered in different locations. Issues in communication can be driven from the fact that the team members change in every project. The objective of this study is to focus on the related issues of these changes, how the challenges are effected by virtuality and what are the project management challenges in virtual and temporary projects.

By reviewing the theories from virtual project management and temporary organizations a research framework is built, which will be used in the empirical part of the thesis. Mirroring the challenges of virtual project management to the theory of temporary organizations, we can study the virtual and temporary project management challenges. There are only few studies existing that have this view on project management. The research gap is in the convergence of virtual and temporal

project management. In the empirical part of this thesis, there are interviews documented with people working in these kinds of teams.

1.4. Research questions

The thesis tries to answer question

"What are the project management challenges in virtual and temporary projects?"

by asking a sub questions

"Do the concepts of the theory of temporary organization effect on the challenges of virtual project management"

And

"How does concepts of the theory of temporary organization effect the challenges in virtual project management?"

To answer the research questions, this study builds a framework, which is used in the methodology part of the thesis. The findings of the study should help to identify the effects of temporality to virtual project management challenges.

1.5. Research method

The scarcity of prior research and lack of prior framework or theory that could be used in this specific research area, qualitative research is appropriate (Yin, 1994). Qualitative research method is exploratory, explanatory and descriptive in nature (Ibid.). The research method of the thesis is a single case study. The case company is operating in over 20 locations across the world and have strong experience in temporary and virtual project management. By interviewing employees from the project department, valuable insights and views can be attained about the research topic. Using literature review to build a research framework and performing five semi-structured interviews to the case company's project department employees, the study aims to map out the special challenges related to virtual and temporary project management. Generalization of the findings

should be done with extreme caution and the findings should be rather compared with the theory (Ibid.).

1.6. Structure of the thesis

The thesis will continue with a literature review as the second chapter of the thesis. The literature review is based on literature from traditional project management, the challenges of virtual project management and theory of temporary organizations. At the conclusion of the of the literature review, a summary to collate the chapter is provided. In the third chapter, I will introduce the reader to the research design. This chapter shows the reader how and why the empirical part of the thesis was constructed. The fourth chapter presents the findings and the reviewed research framework. The fifth and last chapter of the study is conclusions. With the summary, there will be also implications for managers, limitations of the study, and directions for future studies.

2. LITERATURE REVIEW

This chapter will introduce the relevant literature used for building the framework for the thesis. It starts by reviewing the theories and models related to the project management. First, the objective is to introduce the reader to projects and project management in general and to establish the context for rest of the chapter. Second, I will go through the main challenges identified in the literature related to virtual project management. Third, I will introduce the reader to the theory of temporary organization. In the end of the chapter, I present the research framework, which will combine the challenges of virtual projects and the theory of temporary organizations into the research model used in the thesis.

2.1. Introduction to project management

In this section, I will go through the basic concepts of project management that are common to all projects. The importance of reviewing the basic concept is that it helps the reader to understand the basic concepts and elements of project management.

2.1.1. Defining a project

"Project is a temporary endeavor undertaken to create a unique product, service, or result" (Project Management Institute, 2008)

The above is one definition of a project. Constructing the pyramids, launching a man to the Moon, or writing this thesis are all examples of projects. Whether a project is considered to be big or small depends on the viewpoint. It would be safe to say that projects have been around for ages. Nevertheless, during the last century more systematical tools for project management, such as the Gantt chart, Work Breakdown Structure (WBS), and other methods were developed (Schwalbe, 2007). These kinds of methods are focusing more on scheduling of the project; however, as Belassi and Tukel (1996) state, project management is far more complex than just scheduling tasks. In their study, they have identified several factors affecting project success, which they categorize in four categories: factors related to the project manager and team, the project itself, the organization and the external environment. That is, even if the internal factors- project manager and the team,

the project and the organization- would be the same, the surrounding external factors seldom are. With all these variables, it is safe to say that all projects are unique. In addition, Kerzner (2009) points out, that a human factor is involved, as projects inquire both human and nonhuman resources. This means that a project is not just a set of tasks, but also collaboration between different people involved. Moreover, as the surroundings are ever changing, all project stakeholders need to be ready and adapt to the changes during the project. Handling the human relations in the project can be the most important role for which the project manager must care (Kerzner, 2009).

Project stakeholders

In the center of project stakeholders is the project manager who is responsible for the completion of the project and running the heart of the project, the project team. The team is usually formed in response to the project´s needs and brings together the human resources for the project. Team members can be from different departments of the organization and include external experts. The project sponsor is usually a senior level executive who has the ownership of the project. The project sponsor is the one who identifies the need for the project and possible defines it. Other possible stakeholders include but are not limited to, partners, suppliers, support functions and project customers. These customers might be inside the organization (internal customers) but also might be an external client for whom the project is made. Seamless communication and coordination of tasks between the different stakeholders is crucial for the project to be successful. Between them, there usually are no natural way of cooperating and communicating. Narrowing the gap and bringing the stakeholders together is one of the project manager's primary tasks. (Schwalbe, 2007; Gibson and Cohen, 2003)

Below is an example of the project stakeholders in a project. Showing the project manager in middle; illustrates his task of making all project stakeholders work to together for a common goal and acting as an intermediator between them.

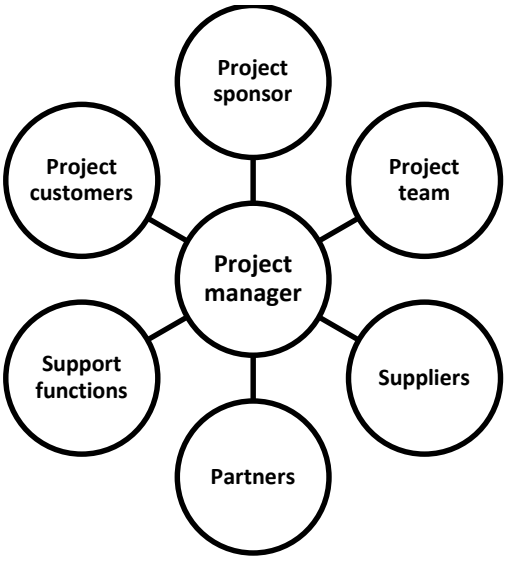

Figure 1 Example of project stakeholders

The triple constrain

A common trait to all projects is that they all work within the triple constraint, which includes time, scope and cost (Schwalbe, 2007). Time refers to the target schedule for completing the project and cost refers to the target cost resulting from the project. Scope refers to the work that needs to be done and the end result of the project; i.e. what is the target outcome of the project and what tasks are needed to do to achieve that target. In literature, quality is sometimes added to the picture as a fourth constrain or even replacing the scope constraint. In this thesis, quality is considered to be included in the scope as increased demand on quality will increase the scope and vice versa. These three constraints are set when defining the project, but can and often do change during the project. (Schwalbe, 2007; Atkinson, 1999)

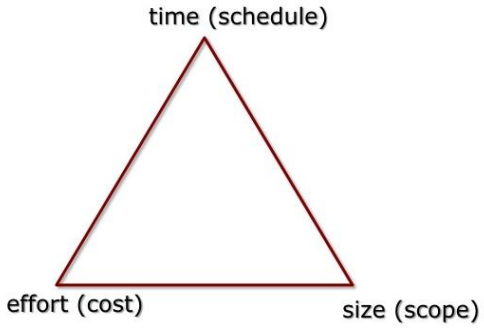

Figure 2 The triple constraint (Schwalbe, 2007)

The constraints are interrelated, which means that, a change in one constraint affects the others. For example, if a project needs to be completed faster, then it has to be done in a more costly manner or by limiting the scope of the project. Project managers often have to make choices between the constraints in order to complete the project. (Schwalbe, 2007; Atkinson, 1999)

Project phases

Traditional description of a project includes five phases, *project initiation, planning and design, execution, monitoring and controlling and completion* (Schwalbe 2007). In the initiation phase, the potential project is analyzed from various aspects and the project proposal is approved. Here, the project targets are set and the general outlines of the project are defined.

In the planning phase, the project gets "more meat to its bones" and the level of detail increases. Schedules, budget and other plans are agreed. In the execution phase the actual work and other activities are done. In the monitoring and controlling phase, the project execution is evaluated. If there is something that is not done or the requirements have been changed, then the process is revisited and a new plan is made. It is important to monitor and control the project closely to ensure that it is aligned and the project meets its targets. In the completion phase, the project is closed with the relevant stakeholders. Here the project sponsor and/or the client accept the project and the project is considered to be completed. Often, the three middle phases are repeated several times to get the project done. There can be also other approaches to project management, which are more iterative and incremental. Especially software projects are handled iterative and incremental way,

as they tend to have more uncertainty involved. Nevertheless, projects need a dedicated project manager to take a project through the different phases and to take the responsibility that the project goes meets its targets. The tools and methods used in projects vary depending on the type of the project, industry and situational factors; because of the uniqueness of projects, there is no "silver bullet" for successful project management. (Zwikael and Smyrk, 2011; Schwalbe, 2007; Rasid et al., 2014)

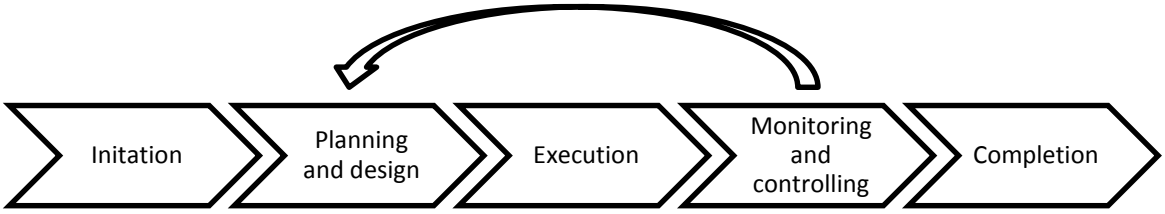

Figure 3 Project management phases (Adapted from Schwalbe, 2007)

The traditional process flow is not the only way a project can proceed. For example, the agile project managing style differs from traditional linear style by chopping the project work into smaller pieces, which deliver a result in each of the iteration cycle of the project. These smaller results compose the project total end result. The iteration cycle is repeated as many times as needed to achieve project completion. Agile methods are more flexible when it comes to changes in the project. The popularity of agile methods, especially in IT industry, has increased in the past years. When project complexity increases, the agility and ability to react to changes is emphasized. (Augustine et al., 2005)

When admitting the facts that project are unique, and that the environment where projects are conducted are ever changing, stakeholder scene is complex and projects are bound to the triple constrain, there is a justification for a need of project management. Turner (1993) noted that these features of projects creates three pressures:

- Uncertainty to project outcomes and effect of the project
- Need for integration, tasks, processes, resources and stakeholders of the project need to be managed
- Projects are subject to urgency. Projects are always set with a due date

Before discussing project management, an accepted definition of project success must be established. Project management as a task aims for project success. The question if a project is a successful one is usually defined in the initiation or planning phase of a project but the definition of a success might also change during the project.

2.1.1. Defining a successful project

Success of a project depends on the viewpoint. Different stakeholders might have contradictory opinions of project success. For a project team member, e.g. software developer, the project might not be successful, but for a project sponsor, the project might be a huge success. This is an example of subjective project success. In order to have an objective view on success, one must examine this further.

Literature has identified that there are two sides to success in projects, project success and project management success (Cooke-Davies, 2002; Jugdev et. all, 2013; Westerveld, 2002). Behind every project, there is a reason why the project was started. Usually, the reason is to fill a business need of some sort. Project success means, that the project serves the need behind the project initiation and answers the question "What was accomplished?" (Westerveld, 2002). If the business need was fulfilled, although managed poorly, it could still be considered as a successful project, but usually with a price (Jugdev et. all 2013). The price can be monetary, the project might be late or the end result is not meeting the scope target. For example, there might be budget overruns or missing features. As stated earlier, the triple constrain defines the project and its success to some degree. With better project management, achieving the project targets is more likely, but more importantly, transferring the knowledge from project to project and building organizational value from the projects is more certain (Cooke-Davies, 2002). Project success and project management success do not necessarily correlate (Ibid.). Project management success is measured by the efficiency of the project management process and answers the question "How the accomplishments were made?"

(Atkinson, 1999; Westerveld, 2002). This means that even a properly managed project might end up as a failure due to, e.g., external reasons or other reasons that the project manager cannot affect.

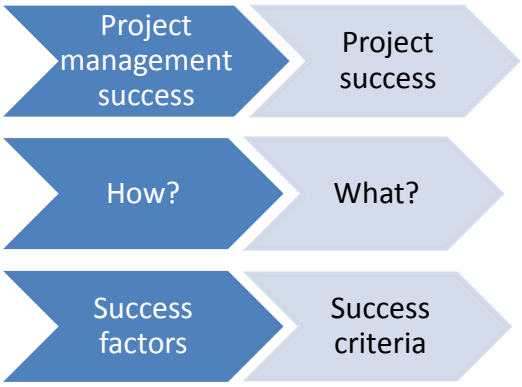

Figure 4 Project success dimensions (Adapted from Atkinson, 1999; Westerveld, 2002)

Projects, and especially IT projects, are notorious for their failure rate. Standish Group publishes yearly in their CHAOS study a review of IT projects success rates (The Standish Group International, 2013). They have collected data since the year 1994 and it is considered one of the most extensive reports in its field. The Standish Group categorize projects as successful, challenged, or failed. Until 2008, they have observed a steady increase of project failures up to 24% and the challenged projects have been around half all the time (Ibid.). Only a third of the projects can be categorized as successful in the relations of meeting the triple constraint targets. Recently, they have seen an increase in the success rate of projects up to 39% (2012) (Ibid.). There is a significant difference between small and large projects. In 2012, small projects show a success rate of 76% while in the same year large projects produced only 10% success rate (The Standish Group International, 2013). This is explained by the increase in the complexity of a project as its size grows, thus making it more difficult to manage successfully. A suggestion to favor smaller projects was stated in the report. Similarly, the importance of comprehensive management of the whole project is highlighted as seen in the quote below. The problem with the CHAOS report is, that it measures only the end result of the projects in a scale of time, scope and cost targets.

The increase in success is a result of several factors, including looking at the entire project environment of processes, methods, skills, costs, tools, decisions, optimization, internal and external influences, and team chemistry. (The Standish Group International, 2013)

Cooke-Davies (2002) uses success criteria and success factors to separate project success and project management success. With project success, there should be success criteria for a successful project set and project management success is more about success factors related to that project success. Westerveld (2002) further divide the success factors into factors within the control of the project manager and factors that the project manager cannot control. This is important to recognize, because sometimes projects fail due to external factors and good project management can only minimize the losses. Therefore, project managers should concentrate on the issues in their control, but at the same time look out for the external risks that might materialize. The linkage between project management and project success has been proven both scientifically and in practice. Critical success factors of projects have been studied in the literature for a long time. The common view in this field of study is that controlled project management is a significant driver for a project to be successful.

From a practitioners' point of view, different project management methods are also popular. Several different instances (e.g. Project Management Institute, Australian Institute of Project Management and Association of Project Management) have developed their own methodology or a framework for project managers to use. These different frameworks address the same issues, with slightly different emphasis. Similar to all of them is that they all try to cover all aspects of project management and act as a tool for project managers to achieve project success. Therefore, the different project management methods are touching the success factors of projects. (Papke-Shields et. al., 2009)

2.1.2. Traditional project management

In this section, the components of traditional project management using the nine knowledge areas of project management are reviewed. Traditionally. project teams are non-virtual and on-going, team members are all located in one location, and the team has same structure from project to project.

"Project management is the application of knowledge, skills and techniques to project activities to meet project requirements. Project managers must not only strive to meet specific scope, time and cost targets of projects, but also facilitate the entire process to meet the needs and expectations of the people involved in or affected by project activities." (Project Management Institute, 2008)

There are many attempts to define project management and even ongoing discussion whether there can be an accepted definition at all. Earlier, the definition of project management, and specifically project management success, was linked strongly to the triple constraint. Project management was explained as a task to meet the time, scope and budget constraints of a project and, if those targets were met, then management of the project would be deemed successful. Later, the idea was introduced, that project management includes also the facilitation of the entire processes and interaction of people, in addition, project management is responsible for transferring the gathered knowledge between projects. Despite the commonalities, project management can be seen also as an evolving phenomenon, which changes through time and projects. The uniqueness of projects brings challenges to attempts to define project management strictly. (Atkinson, 1999)

2.1.3. The nine knowledge areas of project management

In this thesis, I use the nine-knowledge areas framework to cover different aspects about project management. It is a widely accepted comprehensive viewpoint in project management and, accordingly, it is easy to categorize the different elements and processes of project management. The nine knowledge areas try to answer the question "How?" when it comes to the project success. Project management is a complex mix of different tasks and processes, which are difficult reduce down to a few words or sentences. Introduction of the nine knowledge areas will give the reader an extensive view what kind of issues a project manager will have to face in his line of work. (Westerveld, 2002; Schwalbe, 2007; Kwak and Ibbs, 2002)

The Project Management Institute (2008) divides the different characteristics that are needed from the project manager in order to successfully complete a project. Because projects come in many forms and all of them are unique, a good project manager has to be familiar with all the knowledge areas. Each of the nine knowledge areas consists of a group of processes and tasks within the

project. Zwikael and Globerson (2006) group sixteen planning processes and products into the knowledge areas (see table 1).

Table 1 Planning processes and products by knowledge area (Zwikael and Globerson, 2006)

Planning product	Planning process	Knowledge area
Project deliverables	Scope planning	Scope
WBS chart	Scope definition	Scope
List of project activities	Activity definition	Time
PERT or Gantt chart	Activity sequencing	Time
Activity duration estimates	Activity duration estimating	Time
Activity start and end dates	Schedule development	Time
Activity required resources	Resource planning	Cost
Resource cost	Cost estimating	Cost
Time-phased budget	Cost budgeting	Cost
Quality management plan	Quality planning	Quality
Role and responsibility assignments	Organizational planning	Human resources
Project staff assignments	Staff acquisition	Human resources
Communications management plan	Communications planning	Communication
Risk management plan	Risk management planning	Risk
Procurement management plan	Procurement planning	Procurement
Project plan	Project plan development	Integration

From the table it can be seen that the knowledge areas consist of several processes and tasks within an area of specialization. Not all processes are necessarily required for every project and projects can be run without extensive planning but the processes and tasks within the knowledge areas all aim for successful project delivery. Depending on the project, some knowledge areas becomes more important and some might not be even needed.

Scope management

Especially in the project initiation and control phases, scope management plays in key role. In the initiation phase, scope management defines the amount of work to do in the project. This is highly important because scope, and scope management effect on all areas of a project. In the initiation

phase, the total work of the project and target of scope is set. Later, when the project is ongoing, the scope of the project might change. This is normal, but it is important to control the change of the scope as it has extensive effect on the project. Uncontrolled change in the scope is one of the biggest drivers of project failure. (Schwalbe, 2007; the CHAOS Manifesto, 2013)

Time management

This activity is related to the work duration and the schedules of the project. All projects have a timeline. Proper time management ensures that the project is completed on time. Exceeding a given timeframe can lead to significant cost overruns. Time management is not always an easy task as many times the work estimates are vague and uncertain. Although being a major challenge, time management activities are critical in projects and should be diligently planned. Even with structured time management in the project, it is very challenging to synchronize different tasks and deal with changes in the schedule. (Schwalbe, 2007)

Cost management

As projects are often given budgets, cost management is needed. This includes cost estimations, budgeting, and cost control activities for all of the costs derived from the project (Schwalbe, 2007). It is important to have realistic estimations of project cost. If the project cost estimations are too low, unexpected costs may lead to shutting the project down. If the cost estimations are too high, the oversized budget might prevent other projects to be initiated. In addition, oversized budgets can cause inefficiency in the project. Using historical data or reference project is a good start, but the uniqueness of projects causes uniqueness of project cost. It is natural that the project costs estimations become more accurate as the project develops. Controlling the budget during the project is imperative, because exceeding the budget might cause the project to have negative return on investment.A negative return on investment, in turn, may signal project failure (Schwalbe, 2007).

Quality management

Quality management defines the quality targets and ensures that the project meets its targets (Schwalbe, 2007). Defining the project quality measures in the planning stage is key to measuring

them during and at the end of the project (ibid.). The importance of quality in a project differs from project to project. For example, life critical products/systems require higher quality than others do. Even projects that produce low quality outcomes can be successful ones. However, if projects continually emphasize high quality, then an outcome may be that the efficiency of projects suffer. Therefore, doing projects with the right quality rather emphasizing only high quality is preferable. If the quality is well defined at the start of the project, it is easier for the project team to optimize their efforts.

Human resource (HR) management

HR management ensures that the project has the appropriate people involved and that are managed, motivated, and organized (Schwalbe, 2007). This area is critical in all projects where people are involved (which most projects do) as they are the key resource of a project (ibid). As an analogy to sports, finding the best possible talents is not as important as to compile the best possible team. Also poor selection of a project team member can have a great impact on the whole project. This activity is important every time a new team is assembled or a new team member is recruited.

Communications management

This ensures a proper way of generating, collecting, disseminating and storing information related to the project (Schwalbe, 2007). Effective communications to all project stakeholders in the project is crucial, because, as often argued; working communications is the key to successful projects (ibid). Communications management includes the channels of communications used, which is important especially in virtual projects (ibid). Without proper communication management, the chance that project falls into chaos is high.

Risk management

Identifying, analyzing and responding to risks related to the project. Mapping all the risks related to the project is a critical part of the risk management. Risk management helps the project manager to prepare the unintended events during the project. The risks of the project should be taken into account for their impact on the project and the likelihood of risk materializing. Plans to deal with

the risk in question is essential in risk management. This way the mitigation of risks is prepared and ready-made plans exist if the risks come true. (Schwalbe, 2007)

Procurement management

Procurement management ensures that all products and services related to the project are procured efficiently. This includes make or buy decisions, contracts, service level agreements, etc. If external services covers large parts of the project, then the importance of procurement management increases. Some projects might have large tasks outsourced, therefore, managing this area might become the most important area of the project. (Schwalbe, 2007)

Integration management

The last knowledge area is about the coordination of all the processes, tasks and people in the project and the integration of other knowledge areas. Integration management unifies the other knowledge areas and extends to all areas of the project. During the project execution but especially when changes are made in the project integration management is essential. Even a small change in part of the project might have a big impact on the project as a whole. As stated earlier, changes in projects are extremely likely. Integration management also includes stakeholder management. Communicating with stakeholders, especially when changes to project occur is imperative. Therefore, integration management has a key role of delivering a successful project outcome. (Schwalbe, 2007)

The nine knowledge areas are needed throughout the project, from its initiation to the closing of the project. Depending on project, the importance of a certain knowledge area in a particular project phase is different. Integrating the knowledge areas in all phases of the project is important, even if a knowledge area is in a small role in the project phase. Previous research indicates, that mastering the nine knowledge areas is major part of project success, but, furthermore, it is essential that the organization transfers the knowledge gathered from previous projects to future projects and grows the maturity level of project management. (Rasid et al., 2014; Kwak and Ibbs, 2002)

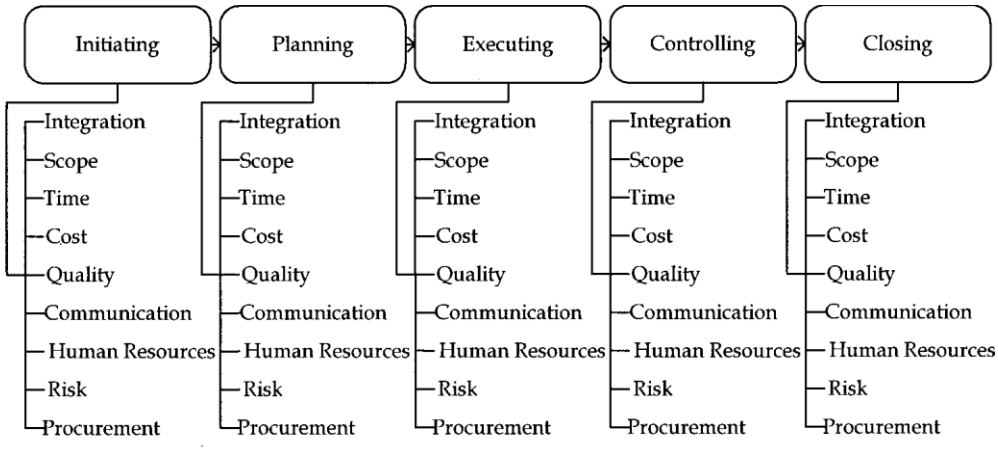

Figure 5 Integrating project processes and project management knowledge areas (Kwak and Ibbs, 2002)

There is also criticism towards the nine knowledge areas. Fitsilis (2008) states that the method is too heavy with different processes and demand of knowledge of wide range of different areas compared to agile methods. He argues, that especially in software projects, using agile methods will cause more efficiency, but in the same article admits, that the agile methods do not cover all the areas needed.

Other criticism comes from proponents and detractors of the nine knowledge areas. People using the nine knowledge areas admit that it is a handful and managing all the areas well is hard. Additionally, knowing the ropes of the nine knowledge areas does not guarantee the success of a project, as there are environmental factors and different stakeholder opinions to define project success. Westerveld (2002) states in his criticism toward the nine knowledge areas, that the link between the knowledge areas and processes related to the project success is disputable. However, one should bear in mind, that factors affecting project success are various. A project manager and his team efforts might be futile, because of external reasons mentioned earlier.

The nine knowledge areas collectively is only one framework out of many other frameworks. Literature identifies also several other project management models which are used in project management. The nine knowledge areas approach was chosen for this study to illustrate the different parts of project management and to give the reader a good overview of project

management. The next section reviews the literature of virtual project management and related challenges.

2.2. Virtual project team management

In this section, I will go through what is meant by virtuality in projects and how virtuality effects on project management. Several drivers today push organizations into applying new work methods. Virtuality as a new dimension to project management changes the way people interact with each other. The relevance of the preceding justifies the reason for introducing in this part of the thesis the virtual way of working and the challenges it brings to the project management. This section ends by reviewing the biggest challenges stated in the literature of virtual project management.

Globalization, technological advancement, moving from production oriented to service business and other changes and trends in the world has molded the business environment. Organizations are using more virtual project teams than before. Virtual project teams differ from traditional project teams in location and communication style. Traditional teams are located in the same location and the main communication style is face-to-face, but in virtual teams both are quite the opposite. Virtual project team has three characteristics. First, the team uses technology as primary means of communication. This means that, e.g., email, video conference technology, and other online collaboration tools are used. They can have face-to-face contact, for example, for their kick-off meeting, but communication is primarily done virtually. Second, they are geographically dispersed. This means that they might work in different continents, countries, cities or even buildings. Lastly, they all work for a shared common cause or task. Without this common cause, they would be only a virtual network, thus not fulfilling the definition. Communication method, location and common task are the defining characteristics of a virtual team. (Gibson and Cohen, 2003; Reed and Knight, 2009; Kayworth and Leidner, 2000)

The level of virtuality can be low or high, depending the level of physical interaction. If, for example, half of the team is located in same room and other half is distributed around the world, it is still a virtual team, but the level of virtuality is lower than if all members would be working in different locations. The degree of virtuality can be judged by two factors: electronic dependency

on communication and geographical dispersion. Even if only one of the project team members is considered to be fulfilling the terms, the project team is virtual but at a very low level. The level of virtuality affects the project team the more virtual the project team is in the continuum of virtuality; the more it is affected by the virtuality. As a result, the challenges related to virtual teams affect the team more. (Gibson and Cohen, 2003; Reed and Knight, 2009; Lee-Kelley and Sankey, 2008)

There are several benefits identified in scientific literature and among practitioners of a virtual project team. Kayworth and Leidner (2000), for example, names effective utilization of workers in a de-centralized organization, cycle-time reduction, and cost efficiency as reasons to use virtual teams. The first benefit is obvious; using technology, an organization can select the employees that fit to the project without geographical boundaries. Cycle-time reduction can come from various reasons. For example, due to geological dispersal, the team can work around the clock without interruption as they are in different time zones. Many reasons can explain cost efficiency. With a virtual team, organizations can offshore their functions to countries with a cheaper or more effective workforce. Ebrahim et al. (2009) listed in their literature review as advantages amongst other things *high team effectiveness and efficiency, reduced logistics costs, greater productivity, shorter lead times, knowledge transfer, improved pooling of talents and higher response times.* Similar themes can be found in other studies as well (e.g. Lee-Kelley and Sankey, 2008; Kayworth and Leidner, 2000 etc.).

2.2.1. Challenges with virtual project team management

In today's world, where technology is connecting efficiently people from different parts of the world, the main challenges are related to social and managerial aspects (Piccoli et al., 2004). The emphasis of these challenges are much different from traditional project team challenges. Da Silva et al. (2010) found in their research 30 different challenges related to virtual project management from scientific literature. They state, that challenges for virtual teams are more complex and numerous, because the project team is distributed globally. The five most frequently mentioned challenges in their review are: effective communication, cultural differences, coordination, time-zone differences and trust. A similar kind of categorizing of challenges or risks can be found from

several other studies; they might group the challenges differently and combine them depending on the viewpoint. For example, study made by Oertig and Buergi (2006), identified categories like leadership, virtual communication, trust, management of tasks and people, language, and cultural and organizational challenges.

Regardless of the distinctions of grouping, the same themes repeat. In addition, it could be argued that many of these, if not all, affect one another. The element of trust is a critical part of effective communication and communication is a part of coordination (Bergiel et al., 2008). For the purpose of this study, limitations to the research has to be made. Reviewing 30 different challenges identified by Da Silva et al. (2010) would not serve this thesis. Because of that, I review the four most common challenges of virtual project management found in the literature. The challenges are chosen by their popularity and influence in the literature. In addition, the reader should keep in mind the interrelations of them.

Communication

Good communication is the basis for all teams, both virtual and co-located. In regards to the knowledge areas presented earlier, communication challenges have been acknowledged also in traditional teams, but the scenario changes in virtual settings. Communication has been a hot topic from early on in research dealing with virtual teams. Because distributed teams cannot communicate face-to-face, they have to rely on technology for communication, which hinders the communication (Piccoli et al., 2000). This also limits the communication to being more formal and a lot of; "coffee break conversation" is missing in virtual teams (Lee-Kelley et al., 2004). Hertel et al. (2005) note, that virtual teams having more informal discussions have been proven to be more productive and efficient. The communication scheme changes if face-to-face communication is not possible or is very limited.

Technology can be seen not only as an enabler of communication in virtual teams, but also as a communicative challenge. Communication technology has been taking enormous leaps in recent years. When technology first was used by virtual teams, communication was handled via phone and email, but today newer technology has increased communication efficiency. Video conferences and instant messages are normal tools of communication in today's virtual teams. This

has improved the level of communication, but still it cannot replace face-to-face communication. Krauss et al. (1996) stated in their study that most communication between people is more than words. Body language, facial expressions, gestures and situational factors are more important than the exact words, and the true meaning of a message might not be even possible to transmit over a technology based communication medium. At least, non-verbal communication cues makes the communication in a virtual team much more challenging, but the risk of communication error can be mitigated at least in some level by the newer communication technology (Kayworth and Leidner 2000). Piccoli et al. (2000) and Kayworth and Leidner (2000) both found in their studies that communication effectiveness correlates positively to satisfaction of team members in the project work and in the end result of the project.

Piccoli et al. (2000) state based on earlier literature that virtual teams face more communication problems due to *delay of communication, inability to assess understanding of fellow team members,* and *team members´ differing frames of reference, language, culture and motivation to participate.* Time zone differences and technology used have a great effect on delay of the communication. If the time zone difference is substantial, then the team members might not be able to work simultaneously hence, booking, for example, video conference is difficult or even impossible. Big time zone differences force the team members to use more ineffective ways of communication, e.g., emails. In addition, responding to emails might take longer than normally due to time differences (i.e. when the other team member sends email during the daytime, but the receiving college has already left home and opens the email in the next morning). The delay of communication hinders the decision-making and workflow of the team and has a negative impact for the project. (Piccoli et al. 2000)

Culture

Virtual communication allows for the pooling of talent across the globe, which can have the consequence of increasing cultural and language challenges. Cultural and language differences are related to the communication challenge a virtual team experiences but also affects on other knowledge areas. In addition, cultural differences have other effects. Different levels of individualism, which is a culture-related issue, has a great impact on team cohesion. People from

individualistic cultures tend to be more independent and have more open and precise communication. This would indicate that individualistic team members are more adjusted to working in virtual settings. Although managers of virtual teams should keep in mind, that more than 70% of people in the world are from collectivist cultures. Clear effects or benefits of team members coming from either an individualistic or a collectivist culture is not clear. Both types gives certain characteristics to the team, which might be useful in different situations. For example, doing isolated and independent tasks might be strong sides of a person coming from individualistic culture, but collaborating and coordinating might be the advantages of a team member coming from collectivistic culture. (Cascio and Shurygailo, 2003; Hertel et al., 2005)

The "rules" of communication differ in individualistic cultures compared to collectivist cultures, but also in relation to communication formality in a culture. For example, in Japanese culture the formality of communication is sometimes more important than the actual information. Compared to, for example, the Finnish way of communication, this might sometimes seem ridiculous. The interpretation of a message sent through email or in a video conference might be very different than the sender meant it to be. The communication risks related to culture can be mitigated by knowledge of team members' cultural background and cultural sensitivity in communication. In addition, a strong organizational culture can diminish the individual team members' cultural effect and a common understanding of working together can be found. (Kendra and Taplin, 2004; Järvenpää and Leidner, 1999; Kayworth and Leidner, 2000)

Language affects communication greatly. As a virtual team must have a common language in their communication, if there is a team member(s) whose language skills is not at the needed level, then the efficiency of communication fall behind. Messages can be misinterpretted or not understood at all. Even among native speakers, there might be different usage or meaning of words, yet along people relying on dictionaries. Virtual team members have difficulties also with sharing common jargon, which , if understood properly, would strengthen the communication. Challenges related to language affect greatly on other areas, e.g., building trust might be more challenging due to language differences. (Kayworth and Leidner, 2000)

In regards to human resource management, which is one of the knowledge areas, the opportunity to recruit from a global pool of talent brings a challenge of making people from different cultural backgrounds work seamlessly together. The additional quality requirement of an ability to work with a multi-cultural team is needed. This brings additional challenges to the leader of the team, which will be gone through later in this chapter.

Trust

From the review of literature related to the thesis topic, trust emerges as a common theme in the context of "the glue" that holds the team together. Trust reinforces the *working relationships, open communication, cooperation, decision-making* and *risk taking* of the team and is, therefore, an essential part of the project success factors (Kanawattanachai and Yoo, 2002). Team dispersion has a negative effect on building trust in a team as co-location enforces social aspects of team cohesion (Latane et al. 1995). Earlier, in the research in the field, the possibility of trust existing in virtual teams was questioned (e.g. Nohria and Eccles, 1992) due to the lack of face-to-face communication, but later, it has been argued that virtual teams can experience even higher levels of trust than traditional teams (Järvenpää and Leidner, 1999).

Trust in virtual teams has two phases: first building trust among the team and, later, maintaining that trust. Both of the phases are important for team performance. Järvenpää and Leidner (1999) identified a need for swift trust in virtual teams. Building trust in a virtual team should happen quickly. The topic is important enough that swift trust is emerging as its own field of study. In virtual teams, there is no possibility to build trust traditionally and for a virtual team to be efficient, swift trust is needed. The debate in trust literature is still ongoing whether swift trust merely replaces trust in order for virtual teams to function. Maintaining that trust is also as important as traditionally defined trust, otherwise, swift trust is fragile. Other challenges related to virtuality in teams (e.g. communication), are affected by trust. (Kanawattanachai and Yoo, 2002; Järvenpää and Leidner, 1999)

Lewis and Weigert (1985) state that there are three types of trust. Cognitive trust refers to the rational trust. Often trust is based on experience and it is a rational choice to trust somebody. Affective trust refers to emotions and the trust is based on the emotional bonds between people.

Behavioral trust is the actions a person makes to show their trust in others. Overall, trust is composed of all these three elements only with differences in the mixes of a type of trust relative to others. Depending on the situation, some mixes of trust are more effective for enabling the team to perform, but especially in a virtual team, Kanawattanachai and Yoo (2002) suggest that cognitive trust should be emphasized. This is because affective trust is much harder to build in virtual settings. Behavioral trust can play a big part in maintaining the trust but when building the trust cognitive trust is essential.

It could be argued that the trust as components of its elements is different between traditional teams vs. virtual teams, but the effect of the trust element being different is not that clear. In virtual teams, the affective trust is hard to build; at least it takes a longer time to build. Affective trust might be replaced with swift trust as earlier suggested, which might be a driver for efficiency in virtual teams. Later, in the next chapter of the thesis when the concept of temporality is introduced, swift trust might be the only option, because the time span of the team is restricted and using time for building affective trust can be seen unnecessary, as the team spread out after the single project.

Leadership

Leadership is a key element of managing a virtual team and it relates closely to the integration knowledge area. Being a leader of a virtual team requires additional attention to the specific challenges within the virtual team while acknowledging the other knowledge areas of project management. In a virtual setting, integration management, management of processes, tasks and people, are different. Especially decision-making, coordination and leadership style are highlighted in virtual settings. Decision-making and coordination of tasks are essential for the team to work; improper management of these will cause chaos, which is not easily sorted. In addition, the softer side of teamwork - team cohesion - is important to take into account. Several research publications show that team cohesion helps people in working towards a common goal, knowledge transfer and supporting each other increase, which is important for team efficiency in virtual setting. (Hertel et al., 2005; Kayworth and Leidner, 2000)

There has long been a discussion in literature about what kind of leadership-style would be optimal for the successful management of a virtual team. A large part of that discussion has been regarding

the appropriateness of transformational versus transactional leadership styles. Research has been done that highlights either one or a mix of the aforementioned styles, but strong consensus on which one is more effective is missing. Transactional leadership is task oriented, has high level of control of tasks and processes, and uses rewards as the motivator for the team members. Transformational, in contrast, is more related to emotions and is based on motivating and inspiring the team to perform. Depending on the situation, one of these is more effective than the other. Accordingly, a manager responsible for a virtual team has to master both leadership styles and use them in proper situation. Project managers need to have the ability to recognize and analyze the situations and select the "right" style for every situation. The same applies to traditional project teams, but in a virtual setting the team is more heterogeneous and the social setting is different, which makes the challenges related to leadership harder to mitigate. (Hambley et al., 2007; Cascio and Shurygailo, 2003)

Virtuality of a project team brings new challenges to managing the nine knowledge areas. Some areas, such as communication, integration and human resource areas are perhaps more affected by virtuality than others are, but it is clear that all other areas are impacted. Managing scope, time, and cost areas and especially the changes in these areas needs communication and leadership as well as trust. None of the challenge areas of project management should be taken as a separate challenge. Challenges of one specific area might effect on other areas. In the next subchapter, I will review the literature related to temporary project teams.

2.3. Temporary project team

In this section, the concept of temporality is introduced and how temporality effects on project management is reviewed. The thesis uses the theory of temporary organization for analyzing the effects of temporality in regards to project management. The literature of temporality is reviewed here to understand the changes in project management scene when elements of temporality is added to the picture.

As traditional project teams differ from virtual project teams in the interaction level, temporary project teams differ in relation of time. Temporary project team, term used in this thesis, is a project

team, which is assembled for the purpose of a single project and, after the project, the team members disperse to other tasks. This adds the dimension of time to the equation of a project team.

Although projects, by definition, are limited by time, necessarily, a project team is not. Saunders and Ahuja (2006) state, that there no framework existing which would cover the temporality aspect of virtual teams. Temporality of project teams is relatively new research area and, temporary project teams has been viewed as temporary organizations (Lundin and Söderholm, 1995). Some research papers has viewed virtual and temporary concepts together as temporality is often linked to virtual settings. Still, research, which would combine both, virtuality and temporality, is yet to be done (Saunders and Ahuja, 2006).

Lundin and Söderholm (1995) separates temporary project team and ongoing project team by task orientation. They say that temporary team has usually one unique task, which is the reason of their existence while ongoing team performs several repetitive tasks. This differentiates them in several levels, as Lundin and Söderholm have illustrated in table 2 below. The biggest differences result from the purpose of the team. From the table, it is easy to see that several things affect on how to manage a specific project change. Unique tasks are often established to create a transition i.e. a change that requires different kind of approach in e.g. leadership.

Table 2 Basic differences of ongoing and temporary teams (Lundin and Söderholm, 1995)

	Repetitive tasks	**Unique task**
Goals	Immediate, specific	Visionary, abstract
Experience	Own or codified by professions	Others´ or none
Competence	In codes and tacit knowledge	Diverse or unknown
Leadership	Low or middle managers	Top management
Development process	Reversible	Irreversible
Evaluation	Result oriented	Utility orientated
Learning	Refinement	Renewal

Ahuja (2006) suggest that temporary and ongoing project teams differ greatly in their structure and processes, and selecting the form of a project team, temporary or ongoing, should be relative to the wanted outcome. Temporary project teams are more suited to, for example, revolutionary change than ongoing project team.

2.3.1. The concepts of the theory of temporary organization

Lundin and Söderholm (1995) presented in their research paper a theory of temporary organization with four basic elements. Projects and a group of projects, programs, can be seen as temporary organizations. The temporary organizations has different terms of reference, which are profoundly effected by constricted time of existent. Viewing projects as temporary organizations, we can see how the temporality effects on a project, project team and project managers challenges. The paper they wrote was a starting point for a discussion and later to the research of temporary organizations. The four elements, which Lundin and Söderholm present to temporary organizations are time, task, team and transition.

Time

Time is an essential factor as projects are set for a due date. All actions made, regarding a project, are related to the project due date either directly or indirectly. Time is limited resource, hence when time span extends, cost tend to rise. As shorter the life span of the temporary project team is, the more challenging it is to establish a foundation for project tasks and processes. Traditional ongoing project team have repetitive task, which they fulfill project by project. There seems to be more urgency involved in temporary teams as postponing the due date of a project will affect larger group of stakeholders. (Lundin and Söderholm, 1995; Turner and Müller, 2002)

Task

Task is the primary reason for the project team to exist. The whole project is built around that single task and all the activities done by the project team, should aim at fulfillment of that task (Lundin and Söderholm, 1995). The task of the temporary organization is, as mentioned earlier, different in nature compared to the parent organization. Sometimes even contradicting. This can

cause also friction between the project organization and parent organization (Jacobsson et al., 2013).

Team

The temporary project team is built to fulfill a single task as ongoing project teams have several projects with the same team. Ongoing project teams, when they start a project, they have common past with old knowledgebase. Team members are familiar with each other and the way of working in that team. Temporary project teams do not have that advantage of familiarity, and the team start from a clean slate. The temporary project team has to introduce itself to the parent organization every time a project is launched and the individual in that team has to also do the same in regards to the project team. In addition, the temporary team members know that they will diverge after the project, so similar kinds of human relationships are harder to create. Similarly, one of the biggest challenges of temporary project teams is to transfer the tacit knowledge gathered from the project to the next one. (Lundin and Söderholm, 1995; Turner and Müller, 2002)

Transition

Transition represents the change that the temporary organization is doing in the parent organization (Lundin and Söderholm, 1995). As the unique task that is often behind the temporary organization is meant for development or change, transition and its management is crucial when speaking about temporary organizations (ibid). That is, the impact of the task fulfilled must also be managed as it effects the parent organization. Jacobsson et al. (2013) note that literature has identified friction between the organizational forms and suggest that these entities should not be treated as separate entities. The role of transition, how the effects of temporary organizations fulfilled tasks, are managed, seems to be important (Lundin and Söderholm, 1995).

The theory of temporary organizations and the later research done among temporary organizations are dealing with the relationship between the temporary organization and the parent organization. The question how to align the goals of these entities and get most efficient result out of the whole has been the center of discussion. As the resources of a temporary organizations are only on loan from the parent organization, which has other strategic goal too, the relationship between these are

not that simple. Nevertheless, these concepts of temporary organization can be used when examining temporary projects as single units. (Jacobsson et al., 2013)

2.4. Presenting the research framework

This section presents the research framework for identifying the effects of temporality to virtual project management challenges.

Managing a single project might not need that comprehensive knowledge of all the nine knowledge areas, but practicing project management profession does. Project act as tool for the organization to accomplish unique task and success of that task is the target of a project. As it is shown in the literature review, the success of project management is a driver for successful project outcomes, making sure that project management overtakes the challenges that come across is the key. Hence, identifying and trying to find solutions to these challenges is important. Projects are unique by definition and handling series of projects means that one is bound to meet different kind of challenges in each of the projects.

This thesis is a project and project scope has to be set. I narrowed the challenges of virtuality in the literature review. Although e.g. Da Silva et al. (2010) found 30 different challenges, Oertig and Buergi (2006) could categorize five distinguish group. In my research framework, I will use four most common challenges, which were reviewed earlier. To examine how the temporality effect on these challenges, elements of temporality needs to be added to the framework. For this purpose, I use the theory of temporary organization (Lundin and Söderholm, 1995) and the four concepts of temporality in my research framework.

The framework is built by combining the four main challenges of virtual project management to the four concepts of temporality. Each area of virtual project management challenge is considered to be affected in some way by the concepts of temporality. For example, trust is a challenge in virtual teams, which is affected by the concept of time. In temporal teams, there are not enough time to build traditional trust. Because of scarcity of previous literature of the subject; and because of the fact, that there are no framework existing to map the challenges of virtual and temporary project; a research framework has to be build.

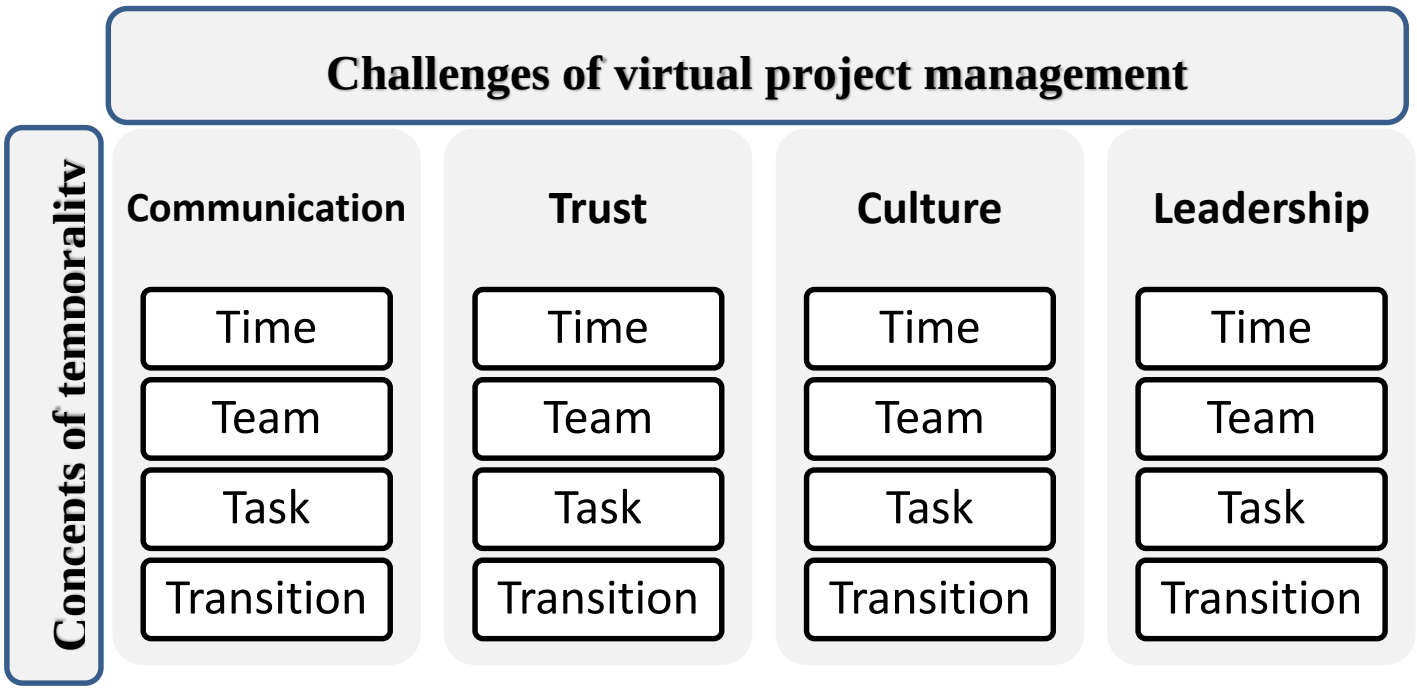

Figure 6 The research framework for examining the changes of the virtual project management challenges

The research framework is build to answer the research sub questions: *"Do the concepts of the theory of temporary organization effect on the challenges of virtual project management"* and "*How do concepts of the theory of temporary organization change the challenges in virtual project management?"*. Using the research framework for answering the sub questions, examination of the research question *"What are the project management challenges in virtual and temporary projects?"* is possible. The research framework act as a outline for the interviews done in the methology part. In the interviews each area of the research framework is discussed in order to answer the research questions. Altogether, 16 different areas for discussion and analyzing are created.

3. METHODOLOGY

The third chapter of the thesis explains how the empirical part of the thesis is build. First, I will introduce the concept of research paradigm and after that what is the paradigm for this study. After that I will go through the research design to show how and what kind of research was done and why. This chapter ends by discussing about the reliability and validity of the data collected.

3.1. Research paradigm

"A paradigm is an overall conceptual framework within which a researcher may work, that is, a paradigm can be regarded as the basic belief system or worldview that guides the investigator" (Guba and Lincoln, 1994)

In scientific research, methodology is only one third of the research paradigm. The other two elements are ontology and epistemology. Ontology is the reality, which is studied through the methodology. Epistemology is the relationship between the researcher and the reality. The four different paradigms of science are positivism, constructivism, critical theory and realism. In each of these paradigms, the elements differ in the way they see the reality, relationship of the researcher and the research object and what kind of methodologies are used to study that reality. Positivism deals with methodologies that are based on exact information, thus mainly quantitate methods are used. In constructivism, the information is built on social interactions. Critical theory is based on the view that reality is a subjective experience and should be dealt with accordingly. Realisms paradigm assumes, that reality is real but not perfectly accessible. This means that triangulation is needed to get better, but not perfect view on reality. (Sobh and Perry, 2006)

Table 3 Research paradigms (Sobh and Perry, 2006)

Element	Positivism	Constructivism	Critical theory	Realism
Ontology	Reality is real and apprehensible	Multiple local and Specific "constructed" realities	"Virtual" reality shaped by social, economic, ethnic, political, cultural, and gender values, crystallized over time	Reality is "real" but only imperfectly and probabilistically apprehensible and so triangulation from many sources is required to try to know it
Epistemology	Findings true, researcher is objective by viewing reality through a "one-eye" mirror	Created findings – researcher is a "passionate participant" within the world being investigated	Value mediated findings – researcher is a "transformative intellectual" who changes the social world within which participants live	Findings probably true – researcher is value-aware and needs to triangulate any perceptions he or she is collecting
Common methodologies	Mostly concerns with a testing of theory. Thus mainly quantitative methods such as: survey, experiments, and verification of hypotheses	In-depth unstructured interviews, participant observation, action research, and grounded theory research	Action research and participant observation	Mainly qualitative methods such as case studies and convergent interviews

"It is likely that quantitative methods and qualitative methods will eventually answer questions that do not easily come together to provide a single, well-integrated picture of the situation" (Patton, 1990). The underlying research paradigm is imperative to review in order to understand the reasoning for the methodology and the research design. Especially, when reasoning between qualitative and quantitative research methods. For this thesis, the research paradigm is realism. In realism, it is important to base the research with prior scientific literature as it is made in this thesis. With the earlier research, a conceptual research framework is build, which in the later stage is then confirmed or disconfirmed. The methods are qualitative and the findings should be considered only as a step closer to the reality. Next section will open the research design used in this thesis.

3.2. Research design

This section explains about the research design of the thesis, why it was selected and how it should be and describes the collection of empirical data.

3.2.1. Case study as a qualitative research method

Because lack of prior research of virtual and temporal project team challenges, a qualitative research is appropriate method for its exploratory, explanatory and descriptive nature (Yin, 1994). A natural reaction for case study is questioning the generalization of the results. Easton (2009) stated, that case study helps clarifying relationships and testing and further building the theory suggested. He also said that case studies helps understanding of the phenomenon in depth and comprehensively (ibid.). Although case study might not be able to provide exact information about reality, it is a step closer to revealing the nature of the reality. It also helps conducting future research relating to the subject. Eisenhardt (1989) states, that qualitative study is a good way to understand the dynamics of the relationships as it helps to understand the drivers behind the phenomenon. In below, the case study process used in this thesis is presented.

Figure 7 Case study process (Adapted from Yin, 1994)

Using a single case study allows the researcher to exclude environmental factors that might effect on the results (Yin, 1994). In multi case study, the researcher has to take into account the changes of environment case by case (Ibid.). Sometimes this can be impossible to do. In single case study, the researcher has to be or became familiar with the environment affecting to the research topic. With knowing the environmental factors, which might affect to the results, the researcher can consider the environmental factors when interpreting the results (Ibid.).

3.2.2. Case company background

The case company in question is operates in 20 countries in finance industry and employs c. 340 persons. The support functions, excluding different country operations, are scattered in 23 different offices globally. This means that the main communication style of the company is virtual. There are also employees, which are mainly working from home. In projects done by the organization there are usually at least one employee, which can be counted as a virtual team member. The nature of projects are always temporal and there are no fixed project teams to be used. When a project manager is assigned a project, he gathers the required resources from the organization resource pool. After the project, the project team departs. Most of the project done by the organization are virtual and temporal. Because of the scattered organization and the way projects are performed most of the employees are familiar with virtual and temporal project management. During the years they have worked in the organization they have firsthand experience with the topic of the thesis. The case company has several years of experience in virtual and temporary projects, which makes the case company a good research subject.

3.2.3. Collection of empirical data

According to Yin (1994), interviews are usually the best way to collect deep information in case studies. Considering the research questions, interviews seemed to be the best possible way to get the practitioners viewpoint. Especially when the theory built was not necessarily familiar to the interviewees. The data was collected using semi-structured interviews in person. This mean that there is room also for discussion and mind work during the interviews. The interviewees were selected because of their extensive experience working in virtual and temporal project teams. The interview language was Finnish, except in one where the language was English. The length of the interviews were around one hour, but it was not limited in order to have room for open discussion.

The interviews were based on the framework build in the earlier chapter. The interviewees were sent an invitation of a interview with the topic of the research and a brief introduction to the themes of the thesis. A thorough introduction to the topic was made in the beginning of the interviews. After introducing the themes and theories from earlier literature and the research problem of the thesis, the interviewees were given the possibility to ask questions in order to avoid

misunderstandings. The interviews were recorded and later written out and send to the interviewees for approval. The interview structure followed the challenges of virtual projects, which all were discussed, from the viewpoints of the concepts introduced by the theory of temporal organization. This way a solid structure of the interview were maintained but still not restricted too much. Discussion were kept open to help interviewees to express their true opinions. For this reason, a promise of confidentiality and anonymity was made. This kind of interview process strengthens the validity of the research (Yin, 1994; Eisenhardt, 1989)

The interviewees were all part of the project department of the case company. They all have an extensive experience in virtual and temporary projects from the case company and from their previous employments. Below is a list of the interviewees.

Table 4 List of interviewees

List of interviewees			
Project director	Interviewee A	Helsinki, 31.10.2014	65min
Project manager	Interviewee B	Helsinki, 4.11.2014	75min
Project manager	Interviewee C	Helsinki, 5.11.2014	50min
Project manager	Interviewee D	Helsinki, 12.11.2014	80min
Project member	Interviewee E	Helsinki, 12.11.2014	60min

3.3. Analysis of empirical data

All the interviews were recorded and transcribed to enable effective analysis of the collected data. This allowed repetitiveness of data analysis from a single source. Each interview could be listened and/or read multiple times. Especially regarding the first interviews, this was an important aspect. The learnings from latter interviews could be used in analyzing prior interviews. Also mirroring

the findings to the framework iteratively gave added value to the research. When researching a topic where there are little prior research done, the data collected should be mirrored to the theory build by earlier literature several times in the research process (Eisenhardt, 1989). This was done also in this thesis. The interviews gave valuable insight, which lead to further reviewing, and adding earlier literature to this thesis. It is fair to say, that the quality of the interviews improved as the data collection process progressed.

As already stated, the analysis of the empirical data was done as an iterative process. This gave flexibility for the analysis. The data analysis followed the structure of the interview structure, which was based on the framework. This allowed the analysis of the data to happen by theme, not by interview. E.g., the theme of communication and technology could be analyzed thoroughly with data from all interviews. In oppose to analyzing the data interview by interview. This enhanced the comparison of evidence, which is important to qualitative analysis (Yin, 1994).

3.4. Validity of the thesis

According to Yin (1994), while considering about the validity of research, one should consider four aspects; construct validity, internal and external validity and reliability. Construct validity is related to establishing correct operational measures for the concepts being measured. In regards of this thesis, where single case study using interviews is made, making sure that construct validity holds is important. External validity refers to the ability to generalize the findings made by the research. External validity is case studies has been a topic of discussion. Building theories from a case, which would concern the whole population, seems impossible. Taking a stand regarding to external validity of a case study research is relevant for the researcher doing case studies. Internal validity concerns about the issue that the researcher is aware about the variables that might effect on the results on the study, i.e. no other variables cause the results. Reliability of a study means that the study and data collection process when repeated creates similar results different times Reliability is an issue to address in all research done, but especially in qualitative research where subjectivity is present. (Yin, 1994)

Because of the nature of the thesis, a case study using interviews as data collective method, the researcher has to have understanding about the questions regarding the validity of the research. Regarding this thesis empirical part, the validity was ensured with using research plan, constructing the framework by wide literature review, interview protocol, using multiple sources of evidence, using triangulation when interpreting the data and iteratively reflecting the findings of the research to the framework built. All these actions strengthen the validity of this research (Yin, 1994; Eisenhardt, 1989). The findings of the thesis should be considered as a step closer to reality. More studies of the subject is mandatory in order to have a better view about the research topic.

4. FINDINGS

The findings of the thesis are presented in this chapter. First, there are general findings about the research topic and overall review to the interviews. After that, each of the subchapters discusses about the challenges of virtuality in reflection to the concepts of temporary organization. The chapter ends with a summary of the findings.

4.1. Challenges of managing virtual and temporary projects

The research objective of this thesis was to find out how the challenges of virtual project management are effected by temporality and what are the project management challenges in virtual and temporary projects.

> "*Most definitely there are challenges* [related to virtual and temporary projects]*!*
> *I hope you have enough time reserved for this interview."* (Interviewee C)

All interviewees said, that both aspects, virtuality and temporality, changes the nature of project management radically. Additionally, all interviewees were familiar with the different challenges of virtual projects but they had not paid attention to the challenges of temporality that much. The awareness of those issues grew in the interviews. Like interviewee B stated:

> "*I actually haven't given much thought to that* [element of trust in transition]. *I will definitely focus on that in the future."* (Interviewee B)

When presenting the theory of temporary organization and the four concepts, especially task and transition were things that needed more introduction. For example, only the project director had given more thought to the concept of transition before. This seems natural as the project director has "higher" view" to the organization and is not that close to the project.

> *"Transition is very important, especially in project where the task is strategically important. Here the role of project sponsor is significant and I see huge differences in how this is handled with different project sponsors. Many times, I need to remind about the importance of conjoining the outcome of the project to the organization."* (Interviewee A)

"*I actually do not care about that* [transition] *that much. Especially when I'm in a small role in a project, I just care that my part is done well."* (Interviewee E)

These contradictory statements reflect the fertility of roles among the interviewees. The benefit of interviewing people from other roles than just project manager's role emerged several times during the interviews. Identifying the views of other stakeholders helps project manager to achieve the project targets (Schwalbe, 2007). In the interviews, there was also discussion about roles and responsibilities of overcoming specific challenge, as these presented challenges needed to be mitigated.

4.1.1. Communication challenge

The first theme of the interview was communication. Challenges related the communication and technology used is one, if not the most mentioned challenge regarding virtual projects (Piccoli et al. 2000). This also reflected in the interviews. All interviewees had experienced problems and challenges in this area. Most of them stated that communication is the key in successful project management. The interviewees also admitted that the challenge of communication and technology was different when talking about temporary teams.

How the element of time effects on the communication challenge?

Time span of projects affects to communication. Several interviewees stated that communication is extremely important especially in the early stage of the project. They said that usually all the projects needed to be launched with similar communicative efforts. When starting a project, all project managers had their own way of launching a project. Mainly the complexity of a project was defining communicative efforts, not the length of the project. That is why in the shorter projects the communicative efforts consumed more in in relation to the project length. In virtual project management literature (e.g. Kayworth and Leidner 2000), communication difficulties eased as the project team got more custom to the communication style of the team. This advantage was missing in the virtual and temporary projects. As the team changes with every project, a foundation for communication has to be established in every project.

In addition, virtual projects require intensive communication throughout the project and the project length affects how the communication is perceived. Following quotes deals with this issue.

> *"People tend to prioritize things that are in front of them and communication is the only way to keep the specific project in front of the team. This is sometimes exhausting and if the project is a long one, even frustrating; probably for the other person too."* (Interviewee A)

> *"There is no such thing as over-communication*." (Interviewee D)

Similar statements were given by other interviewees; confirming the conclusion that communication plays a big part in virtual and temporary project management.

How the element of team effects on the communication challenge?

The fact that the project team is temporary means that project managers has to have internal introduction every time a new project is launched. This consumes valuable project time especially in the initiation phase. Also in some cases there are direct cost related if e.g. people are traveling for kick off session. Still all the interviewees said that the benefits of a kick off session usually exceed the cost in larger and more complex projects. In case of virtual and temporary projects, the question of arranging a kick of session raises with every project.

When discussing about communication and the team all interviewees agreed that communication styles and patterns evolve over period of time. This meant for the interviewees, that the tone and the content of communication are more official when the project team is new. Additionally, motivating the team was stated to be a lot harder when you do not know what drives and motivates the individual team member. This forces task oriented communication with no room for "coffee machine conversations". This kind of conversation has being studied to increase the productivity of project teams (Hertel et al., 2005).

Two interviewees commented on the communication technology used. In their experience, if someone in the team did not have experience in the communication technology used; using the technology was not always efficient. It was suggested, that familiarity of the technology used

should be ensured at the start of a project. In addition, setting communication rules and standards was seen useful for having efficient communication within the team.

How the element of task effects on the communication challenge?

Task orientation regarding communication came evident on the interviews. Especially when the time span was short, communication became very task oriented. In longer projects, the interviewees felt that they had more time for non-task related communication. Some stated that in longer projects, the non-task related communication came naturally. One interviewee was very task orientated regardless of time span.

> *"I don't have time nor interest for chitchat with a person I don't know. We have our job to do.* (Interviewee E)

Individuals have their own communication style and all interviewees pointed that out. They said that project manager could only encourage non-task related communication.

How the element of transition effects on the communication challenge?

The discussion about communication in transition was two ended. On one side, all of the interviewees agreed that strong communication of change towards the original organization is imperative. On another side, the question, who should be responsible for the communication, divided the respondents. Some though that it is solely on project sponsors responsibility to give top-down communication about the change while others mentioned the project manager to be the person in charge of communication of change. There were also mixes of these views.

> *"I'm glad I don't have to worry about that. Some of the projects we do changes a lot of IT systems and processes for the parent organization and sometimes the resistance is big. Trying to sell the ideas can be a difficult task. Then again, communicating to the parent organization is why project managers are paid for."* (Interviewee E)

> *"I spend lot of my energy communicating about the projects to the parent organization. If the project sponsor have not done his part of that my efforts can even have negative effect*

on the reception. It is really important that the project sponsor is on top of his role in the projects." (Interviewee D)

The above comment highlights the fact that temporal project teams are usually assigned for project that cause radical changes to the parent organization (Lundin and Söderholm, 1995). This causes additional communication efforts for the project manager. In addition, this emphasizes the role of a project sponsor in virtual and temporary projects.

4.1.2. Trust challenge

How the element of time effects on the trust challenge?

"Trust is good, control is better." (Interviewee D)

An Interviewee quoted Lenin when discussing about trust. The point being that he did not have time to build trust in the relationships and assumed that people would do their job as agreed. Control was important in order to make sure that the tasks were done as planned. If not, the project manager needed to know that as soon as possible. The element of time was a factor of trust for many of the interviewees. The longer the time span of the project is, the more evidence of others capabilities and trustworthiness there are, i.e. projects, where the evidence comes only when the project ends, trust is laid on the recruitment process.

"*When I work with people that I don't know, I can only relay that they can and will do the things I ask them to do. That is the reason why they are in my team. If they aren't capable for doing those things, I need to know that as soon as possible." (Interviewee B)*

The need for control was evident in the interviews. Kanawattanachai and Yoo (2002), talked about the three elements of trust in their paper. From the findings of this study, it is evident that there is no room for affective or behavioral trust and even cognitive trust is questionable. If the tasks of the project is not done, the project is delayed, which in temporary projects causes more negative effects due to the nature of temporality (Lundin and Söderholm, 1995). That is why control of the tasks are in such a big role in temporary projects.

How the element of team effects on the trust challenge?

Interviewees said assembling a temporary team was like hiring new people. The problem is that in temporary projects, one need to assemble a new team every time the project change. This means that in every project there is a risk of bad recruitment. In addition, external partners as stakeholders in the project were seen as a challenge. Schwalbe (2007) stated that HR management is one of the nine knowledge areas that a project manager should be familiar with. The findings emphasized this as the comments below suggest.

> *"If somebody do not deliver like they supposed, it's not the teams fault. It's his fault who assigned that person to the team. Or then the project manager should have prepared for this kind of things."* (Interviewee E)

> "*The whole project can be a disaster just because there is one bad apple in the basket. As a project manager, I need to have really good HR capabilities when assembling the team. And not every time I have the luxury of selecting my own team members."* (Interviewee D)

Interviewee D stated that seeing other team members in person increase the level of trust in team a lot. With virtual teams, it is always a cost to have face-to-face meetings. In addition, in temporary projects the benefits of a face-to-face meetings are not cumulating. Other interviewees also agreed that sometimes, usually in complex and important projects, it would be good to have face-to-face meetings but identifying where the benefits exceeds the costs is hard to asses. All interviewees agreed that identifying the situations where a face-to-face meeting were beneficial is hard but it is a valuable skill for a project manager.

The findings suggest that due to both time and team elements of temporality, the existence of trust is questionable. The interviewees promoted control over trust. As the control of the project is project manager's responsibility, it could be argued that in virtual and temporary projects, the trust in the project team is laid on the project manager.

How the element of task effects on the trust challenge?

Trust for the project task was seen as a motivational factor. Task is the justification for the project to exist (Lundin and Söderholm, 1995). If the project task was not trusted, motivating the project

team was as a challenge. It is not about the importance of the task but more about that the task is meaningful and the project team is behind it. The interviewees commented:

> *"I have always a discussion with the project managers about the projects before launch. I get lot of ideas and improvements to the project from them.* (Interviewee A)

> *"I always need to sell the project to the team before we get started. If the guys don't buy it, I need to take another look at the meaningfulness of the project task. Few times I have gone to the project sponsor after this kind of reaction and we have changed the project in some way. This has actually been good for the project and the organization"* (Interviewee C)

> *"Sometimes ideas from top level aren't executable in real life.* (Interviewee E)

Statements given indicates that there needs to be a communication channel throughout the organization for supporting not only the organizational result but also supporting the trust in the task.

How the element of transition effects on the trust challenge?

Trust in relation to transition was seen as a two way street. On one side the project team needed to be sure that the parent organization accept the change they are about to do with their project. Working on a project with already a bad reception said to be critical for the project success. On another side the parent organizations trust in the project team is crucial as it effects on the project. Especially implementation phase was stated to be vulnerable for non-trusting parent organization. A clear and working communication channel between the project team and the parent organization was seen to help the trust creation to the parent organization.

4.1.3. Cultural challenge

Cultural issues were stated in the interviews to create lot of challenges especially among people who are new to the organization. Time spent in the organization correlated to the challenge of culture. In addition, there were mentions about project culture. Different project team had different work culture and in terms of temporary project, this culture changed a lot. Kayworth and Leidner (2000) emphasized the effect of organizational culture replacing the local cultures.

"We have people in our company from all around the world. Evaluating quickly we have around 30-40 different cultures represented. We have acknowledged the cultural challenge from early on and have developed a strong organizational culture to prevent that. Managing a global company without a strong organizational culture would be a disaster." (Interviewee A)

"I have seen a lot during my career. In the end, it all comes down how well I can set the rules and frames for the project team. We all have to have same rules for working and I included have to follow them. This is the only way at least for me to manage virtual and temporary projects." (Interviewee C)

"I set the rules for the project and project work. The big picture is clear for all who has been working here for a longer time. But every project is a little different so I still need to make sure that we are in the same page even in the details." (Interviewee B)

A strong organizational culture has been used effectively in the case company to solve the cultural differences. The interviewees saw challenges only if the new team member had longer learning curve in organizational culture of the case company. External partners were also under discussion as they might have big impact on the project. Introduction of the organizations culture to the external partners was seen beneficial. The interviewees did not see a cultural challenge in the case company hence they could not assess properly the effects of temporality to cultural challenge. The only indication of global company was the language skill differences.

Being able to express oneself in the language the team is using is important. All the interviewees had experienced problems in communication due to the language issues. In addition to basic language skill level, interviewees had notice that people use the language in different way depending on cultural background. In the worst example, a person answered to every question positively, just because he could not give a negative answer to his boss.

*"He [*a team member*] always said there was no problems and he understood everything. Later I found out that he actually had very different view of things and when in doubt he*

always said yes , which created a lot of problems and delays. After this I learned to always dig deeper in order to find out the true situation of things." (Interviewee B)

The above is an example of a new employee. This emphasizes the need for efficient and effective introduction to the organizational culture for new members of the organization. The findings also suggest that even if the organizational culture is familiar with the team, project (manager) specific rules and conducts have to be established in the beginning. In case of temporary team, this activity is repeated in every project.

4.1.4. Leadership challenge

How the element of time effects on the leadership challenge?

The interviews suggest that due to virtuality and time element, the emphasis is in more transactional than transformational leadership style.

"I can only concentrate on the task. I do not have time for anything else. In this line of work you can't rely on your natural leader skills and charisma. The project team changes constantly so any efforts of establishing my leadership is a waste of time. The traditional leadership qualities do not apply in virtual and temporary project management." (Interviewee B)

"Communication and coordination skills. That's it. Nothing more, nothing less." (Interviewee D)

Communication and coordination play a big role in project management in virtual teams (Hertel et al., 2005; Kayworth and Leidner, 2000). The above quote were made when asked about skills of a good project manager in virtual and temporary project team. Also Schwalbe (2007), mentioned that when she discussed about the integration management. When time is limited and the project team changing, there is no room for transformational leadership style. This forces the project manager to be transactional leader, who is task oriented and have high level of control of task and processes. Integration management, having control of the project as a whole was seen to be the key challenge. The challenge in temporary settings focuses on integration. Making sure that the

task of the project gets done within the given timeframe. This needs integration management from the whole lifecycle of the project.

> *"If I miss a project deadline it will have huge effect on the whole organization. Other projects are set to start when mine ends and if I am late, it will have cumulative effect on the other projects timelines. That's why I need to be in control of the tasks within the project."*(Interviewee D)

> *"It's totally different to manage a virtual and temporary project. Virtuality brings the challenge that all the pieces of the project are scattered around the world and I have to keep them together."* (Interviewee A)

The element of time brings a sense of urgency to the projects (Lundin and Söderholm, 1995). This was seen in the responses. Keeping the timelines of the project is crucial. Additionally, time was seen as a scarce resource, which led to the managers to minimize the non-task related issues.

How the element of team effects on the leadership challenge?

Also the element of team reinforced the transactional leadership. As the project team is constantly changing, transformational leadership was seen useless. The concept of temporality changes the leadership focus from the people to the task in hand. This might be a result of the fact that the managers are measured by the completion of the projects, not the well being of employees or other non-project related issues.

> *"Temporality brings the fact that I don't have a team to back me up. All the team members are there to do their task, nothing more. It can get kind of lonely sometimes*" (Interviewee A)

> *"I don't see them [*team members*] as people, I see them as employees. (*Interviewee B)

How the element of task effects on the leadership challenge?

The task is the purpose of the existence of the project team (Lundin and Söderholm, 1995). Management of a virtual and temporary project is concentrated on the task. This was evident throughout the interviews. All the actions that the project managers made were directly for accomplishing the task. One of the challenge mentioned here was related to the non-task related activities.

> *"One of the biggest challenge I face is the non-task related issues. All the time something comes up that is not related to the task hence not my problem. Still I have to deal with them."* (Interviewee B)

Getting the project team to concentrate on the project was a challenge that two interviewees identified.

How the element of transition effects on the leadership challenge?

Transition was seen as another focus area in the leadership challenge. Managing the change that the project brings to the parent organization is crucial for the project to be successful. All interviewees stated that it is the project manager's duty to make sure that the change happens smoothly. The comments below shows the importance of the element of transition.

> *"Transition is very important, especially in project where the task is strategically important. Here the role of project sponsor is significant and I see huge differences in how this is handled with different project sponsors. Many times, I need to remind about the importance of conjoining the outcome of the project to the organization."* (Interviewee A)

> *"Transition is the moment of truth in projects. When you implement the project to the parent organization you can tell whether you have succeeded or not*." (Interviewee D)

> *"I cant do it alone. I need full support from the top to make sure that the recipient of the project has positive attitude towards my project. (*Interviewee B*)*

"People hate change and we are the ones that always bring the change to them. We are not the most popular persons in Christmas parties" (Interviewee C)

As one of the interviewees stated, transition is the moment of truth for virtual and temporary projects. What came up in the interviews was the support of senior management in the transition. Senior managers needs to facilitate the transition process. Without this help from the senior management the project managers had hard time to manage the transition. The fact that the temporary project tends to bring radical change to the parent organization (Lundin and Söderholm, 1995) causes natural friction between the project group and the parent organization. The role of project sponsor is highlighted in this stage. The project sponsor must align he´s efforts with the project manager in order to have a successful transition process.

4.2. Summary of findings

Temporality changes the challenges of virtual project management. All four challenges were effected when the concept of temporality was introduced. Communication was seen effected by all of the different elements, time, team, task, and transition. This might be because communication plays such a strong role in project management. The fact that time is limited in projects do not mean that there should be less communicative efforts, quite the opposite. When the team is constantly changing, setting the communication standards is imperative for success of the project. Task orientated communication was in main role in virtual and temporary projects. Lot of communication efforts in transition is also important and stakeholder communication was emphasized.

Temporality changes the element of trust in virtual projects. The study made suggest that rather having even swift trust, control is used to replace trust. The trust is shifted from team members to the task and transition. Trust in the projects task has to be high level in order to succeed. The project manager needs to find ways to strengthen that trust. Active communication and team participation from the start was seen as useful methods to ensure that. Trust in transition, meaning that the parent organization accepts the result of the project was also seen as a key point. For a project to be successful, the transition must be successful too.

The finding of this study on culture was limited. The element of time changes the emphasis from local or individual culture to organizational culture. In the case company a strong organizational culture do not leave room for individual cultural differences. A challenge was found on the stakeholders that were new to the organizational culture present. Not only concerning the new employees but also external partners were considered here.

The main finding regarding the leadership challenge are related to the task and transition elements of temporality. Due to the task orientation of temporary projects, transactional leadership style was favored in the case company. Communication and coordination were seen the main leadership activities. Project managers and project sponsor was seen as the responsible persons for the success of the project in the transition. Without successful implementation of the project to the organization in stake, the project should be considered as a failure.

The reviewed research framework is presented in figure 8. Communication challenge was seen effected by all elements of temporality. The challenge of trust was shifted from people to task and transition. Control replaced trust in people. Due to the strong organizational culture of the case company, the challenge of culture was almost absent. Only the element of time effected on it. Time was a factor when introducing new stakeholders to the organizational culture. All of the elements of temporality effected leadership challenge. Task orientation and the role of transition was emphasized. The colors in the framework illustrates the effect of a certain area. Dark grey represent the emphasis the challenge has in relation to the concept of temporality. Light grey represents a change in that particular area and white represents the fact that no effect was found in this study.

During the research, heavy dependencies and interactions between the virtual project management challenges was identified. In the project phase, where the project is transferred to the parent organization, communication, leadership and trust played a major role. The absence of trust, communication or leadership at this stage increases the challenge for the rest. Taking comprehensive view on the project management and making sure that all the aspects of project management are taken care of helps in delivering successful projects.

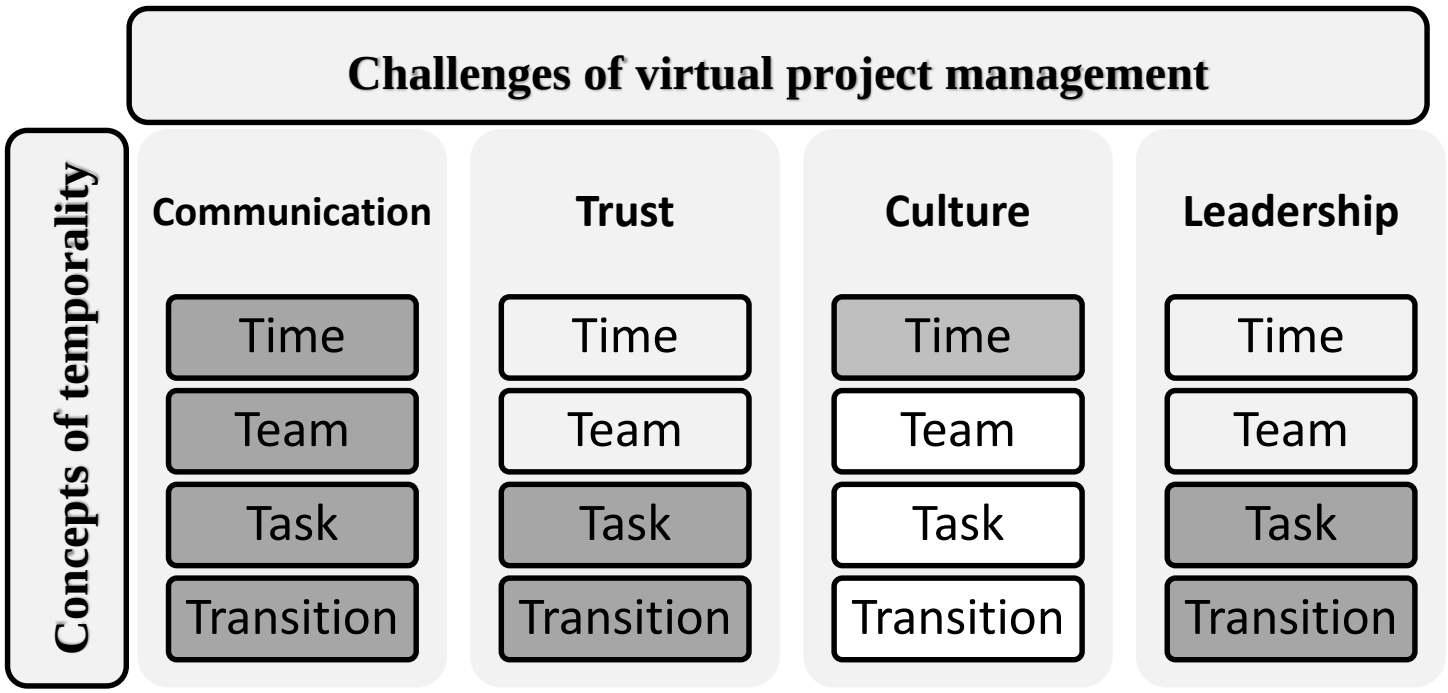

Figure 8 Reviewed research model of how temporality changes the virtual project management challenges

5. CONCLUSIONS

The last chapter conclude the thesis. First, a research summary, a discussion of the research and the findings is made. Later, I will sum up both theoretical and managerial implications and last I will go through limitations of the study and suggestions for future research.

5.1. Research summary and discussion

The research of the challenges related to virtual project management is quite mature, as it is shown in the literature review. There are some touch points to temporality of the team, but that mainly focuses on the challenge of trust and more generally from the viewpoint of the team. In order to get more coherent view to the subject, a research model was build. This research model combines virtual project management and the theory of temporary organization. With the research framework it was possible to examine the effects of temporality.

The research objective was to examine the changes that the temporality brings to the virtual project management challenges. The findings suggest that the concept of temporality do effect on these challenges in many ways. Comparing the findings to the research model used, a conclusion can be made about the changes that temporality brings to virtual project management.

By asking sub questions: *"Do the concepts of the theory of temporary organization effect on the challenges of virtual project management?"* and *"How does concepts of the theory of temporary organization effect the challenges in virtual project management?"* the thesis tried to answer the research question: *"What are the project management challenges in virtual and temporary projects?"*

The findings suggest that the challenges of virtual project management are effected by the concepts of the theory of temporary organizations. The concepts effect differently on the different challenges. The focus in communication is task orientated and the role of communication is emphasized. The challenge of trust is focused on control and the trust in the task is highlighted. Strong organizational culture is identified as a resolution for the culture challenge. Regarding the leadership challenge, transactional leadership is recommended as the challenge is more task related.

The project management challenges that this study suggest are complex and not self-explanatory. Clear and comprehensive answers for the research questions might not have been found but valuable insights are brought to the table. From the findings it can be seen that all of the challenges are highly interrelated. Because of the complexity of the research area and the scope of this study these interrelations could not be investigated fully. For example, when talking about leadership challenge in relation to transition elements of trust and the challenge of communication were present. As stated in the beginning all of the challenges and the effect of the elements were tried to be researched independently. Although this might have limited the findings it was necessary as this was a such new research area. Due to the complexity and interrelations of the challenges more research is needed to answer the research question with confidence.

5.2. Theoretical implications

This thesis combines the research of virtual project management and the theory of temporary organization (Lundin and Söderholm, 1995) to further investigate virtual and temporary project management. The study scrutinizes the research gap identified by Saunders and Ahuja (2006). It recognize the effect of temporality in virtual teams and pushes the research forward. The biggest contribution to the theory is the new research framework build for studying virtual and temporary project management. Several effects were identified and although some of them were already identified in the literature of virtual project management, most of them were given a new perspective.

5.3. Managerial implications

The findings of this study suggest, that the challenges of project management changes when virtuality and temporality is brought to the picture. Project managers who work with virtual and temporary projects can use the results of this study to focus on the issues raised by this study. This study suggests that managers should have high emphasis on the initiation phase of a project. In this phase the rules for communication, work methods, schedules, ways to work, etc. are set. As there is no time for “growing” into a project team, all rules of conducting the project tasks should be set at this stage. Also having high control over the people and strong organizational culture is

suggested by this thesis. Additional focus should be set to the transition phase as this is the "moment of truth" of a project.

5.4. Limitations of the study and suggestions for future research

Because of the nature of this thesis, generalization from the findings is not applicable. The findings should be compared to the theory. The approach of the thesis suggest that this was a step closer to finding reality but more research is needed before drawing more conclusions. Revision of the research model should be done before that. Heavy dependencies were identified between the different challenges. Interesting application would add the interactions and linkages of different concepts of the research model. This might lead to very complex model and simplifying it by leaving the challenge of culture out is recommended.

As this was a single case study with limited respondents the significance of the findings can also be argued. Although single case studies help the researcher to exclude external factors that might effect on results, using multiple case study would generate more respondents. In addition, the thesis built a research framework for studying new areas of project management. For example, control replacing trust or role of communication in transition would be new interesting research areas.

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