

Change management as a part of successful ICT project management

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Objectives

This study focuses on studying the importance of change management within ICT project management. The topic is viewed from a project manager's point of view and the study provides a general overview of ICT project management and the most common challenges in it. A model for ICT project management is created by using the existing literature and interview data.

Research method and data

A general picture on change management and ICT project management was created by using various sources of secondary data. Empirical data was gathered by individual interviews from a single case company. The company has conducted several ICT projects during the past years but does not operate in ICT business. The purpose of the interviews was to gain a picture how ICT projects are managed in practice and whether change management practices can be seen in the management.

Results

An ICT project must have three key factors in place in order to have chances for success. The factors are: communication, a competent project manager with project experience and knowledge about the organization's core business, and top management support. Change management is an important part of the general project management but it is not enough alone if the project manager is otherwise not competent enough or other key factors for a successful project are not in place. Change management practices must support the project management without forgetting the basics of practical day-to-day project management.

Keywords

Change management, IT, ICT project, project management, communication

Tavoitteet

Tämä tutkimus keskittyy tutkimaan muutosjohtamisen merkitystä ICT projektien johtamisessa. Aihetta tarkkaillaan projektipäällikön näkökulmasta ja tutkimus luo yleiskuvan ICT projektien johtamisesta sekä sen tavallisimmista haasteista. Käyttämällä olemassa olevaa kirjallisuutta sekä haastatteluaineistoa luodaan malli ICT projektien johtamisesta.

Tutkimusaineisto ja -menetelmät

Yleiskuva muutosjohtamisesta sekä ICT projektijohtamisesta luodaan käyttämällä sekundääristä dataa useista eri lähteistä. Primääridata kerättiin haastatteluilla, haastattelutyylinä käytettiin yksilohaastattelua. Haastattelut tehtiin yhden esimerkkiyrityksen sisällä. Yritys on vienyt läpi useita ICT projekteja viime vuosien aikana, mutta yrityksen toimiala ei kuitenkaan ole ICT. Haastatteluiden tarkoituksena oli ymmärtää miten ICT projekteja käytännössä johdetaan ja näkykö muutosjohtaminen osana projektijohtamista.

Tulokset

ICT projektin taustalla on oltava kolme perustekijää jotta projektilla on mahdollisuuksia saavuttaa onnistunut lopputulos. Nämä tekijät ovat: kommunikaatio, pätevä projektijohtaja jolla on kokemusta projekteista sekä yleiskuva yrityksen liiketoiminnasta, sekä ylimmän johdon tuki. Muutosjohtaminen on tärkeä osa yleistä projektijohtamista mutta ei yksin riitä jos projektipäällikkö ei muilta osin ole pätevä tai jos muut onnistuneen projektin perustekijät puuttuvat. Muutosjohtamisen tulee tukea projektijohtamista, unohtamatta kuitenkaan päivittäistä käytännön projektijohtamista.

Avainsanat

Muutosjohtaminen, IT, ICT projekti, projektijohtaminen, kommunikaatio

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1 Introduction

1.1 Background

In the current organizational environment, the development of ICT (Information and Communication Technology) –systems and technologies is more and more important. Businesses rely heavily on technical solutions in their everyday work and especially large companies face huge problems if these systems are not up-to-date. Due to this, new ICT projects are started rather often in many companies. In addition to merely ensuring the continuity of systems and operations, ICT has also become a source of competitive advantage. However, many of these projects do not meet their goals or even fail completely.

This study focuses on the importance of change management in ICT-related implementation projects. The purpose is to provide a general view on how to form a basic framework for managing a successful ICT project. Main emphasis is on large projects, such as an installation of an ERP-system (Enterprise Resource Planning – system) or other large system used by the majority of employees within an organization, because these projects have an effect on a large group of people within an organization.

Managing ICT projects has been a widely researched topic for many years. Theories about various sub-topics have been developed and implemented in practice. However, according to Hammoud (2008), only 2,5% of projects fully succeed and over 50% fail completely. In his study, Hammoud describes a failed project being a one in which results don't meet the pre-established requirements for performance, schedule, or cost. The author states that in the year 2001, project failures cost businesses more than \$450 billion.

Legris & Collerette (2006) state that most ICT project failures are due to poor implementation management. The researchers pinpoint that emphasis is too often on the technical side, although it should actually be on the management of the implementation process. The authors also suggest that management and people are the biggest obstacles in a project.

It has become a widely recognized fact that most failures in ICT projects are indeed due to weak management. It can be poor management in general as suggested by Legris & Collerette (2006), lack of sufficient communication and underestimation of required retraining (Price & Chakal 2006), or incapability of managing project uncertainty (Asllani & Etkin 2007). The list is long and researchers give different names to the problem, but they all come down to one common factor - management.

During the past years, more and more emphasis has been put to the concept of change management within ICT project management. The lack of change management has become perhaps the number one reason that researchers suggest for project failures (see for example Williams & Williams 2007; Hammoud 2008; Douglas 2003). Due to this, change management and its importance to ICT project management is chosen as the preliminary area of interest.

1.2 Research Problem and Gap

In the business field, there still seems to be uncertainty about how to form applicable framework for effective ICT project management. Change management is suggested as being the key to success, but implementing change management processes seems to be problematic for companies. Another problem seems to be that investment in good change management is often not considered as something to put a lot of effort into. (Sherer et al. 2003)

Although change management has been such a hot topic for some years, there still is a need for a simplified model of how to manage ICT projects in practice. This indicates that the current literature and research about the topic does not provide models that could be implemented in practice. The concept of change management is a too broad concept that is hard for project managers and people in general to grasp and to put in action in their everyday life.

This study aims to providing insights of why change management should be used and how it can be implemented in practice. Examples are drawn from a single case study of a relatively large Finnish company that has conducted several ICT projects within the last five years. The study observes how ICT projects are managed within this company and what are considered to be the most important success factors in managing an ICT project. Based on the observations, a basic model for ICT project management is created that can be used as a tool for project planning.

The topic is also viewed through the challenges that companies face in ICT projects. Due to the fact that companies struggle with various issues, there is an extensive amount of different ways of coping with the challenges. The tools for fighting the problems are not always considered as change management and this is probably mainly because the people are not familiar with the concept and therefore find that definition hard to grasp.

1.3 Research Objective and Questions

The objective of this study is to gain an overview of change management processes within ICT projects and how to use them in practice as a part of efficient ICT project management. To gain this understanding, it must first be understood what are the most important parts of change management according to the literature. After this the findings are compared to empirical data to view how change management is used in practice in the case company.

The following research questions are answered:

- 1. What is the importance of change management for ICT project management?*
- 2. What are the most common problems in managing ICT projects?*
- 3. How can change management be used to overcome the problems?*

The main emphasis is on studying the importance of change management for ICT project success, but as the second and third question indicates, also some of the most common problems are presented and solutions for handling them are provided.

1.4 Outline of the study

This thesis is divided into five main parts. In chapter one, the topic is introduced and the research problem as well as the research questions is presented.

In the second chapter, the existing literature on the subject is reviewed. Existing theories about change management in general as well as within ICT projects is discussed. Large ICT projects involve more and more people within organizations and therefore the management of people has become very important. Strong emphasis is put on the human aspect of projects and the problems that are commonly faced in managing people in projects. ICT projects are discussed in general level to gain an understanding of what differentiates an ICT project from other business projects. The most common reasons for initiating ICT projects are also reviewed.

The third chapter of the study presents the methodology used. Data gathering and analysis are described and the reliability of the study is reviewed.

In the fourth chapter, the empirical part of the thesis is presented. The results from the interviews are presented and data will be discussed to gain an overview of how ICT

projects are managed within the case company. Based on the literature and the interview data, a simple model for ICT project management is created.

The final chapter provides a conclusion and summarizes the study.

1.5 Limitations

There are some limitations to the study. The empirical part of the study is limited to one company example and therefore the findings may not be applicable to all situations. The empirical part observes projects conducted in Northern and Eastern Europe and findings may not apply in other parts of the world.

The study is limited to observe the managing of ICT projects. When applying the findings of the study, it must be taken into consideration that projects in other fields may require different methods and processes. It must also be noted that in this study, it is assumed that in addition to the organization's project team, an external service provider is working for the project, providing the technical implementation and modifications to the system.

The amount of data is one matter that should be considered as a limitation. Ten interviews were conducted for this study and one could argue whether that is enough to form a framework to be applied for new situations.

1.6 Definitions

Change management is managing the process of implementing major changes in IT, business processes, organizational structures, and job assignments to reduce the risks and costs of change, and to optimize its benefits. Change management is focused on the issues of managing the resistance and discomfort experienced by people in an organization when new processes or technology are introduced. (Managing Enterprise Content Glossary, retrieved October 5th, 2009)

Enterprise resource planning system (ERP-system) is a system that integrates (or attempt to integrate) all data and processes of an organization into a unified system. A typical ERP system will use multiple components of computer software and hardware to achieve the integration. A key ingredient of most ERP systems is the use of a unified database to store data for the various system modules. (Cams Three River Systems, retrieved September 15th, 2009)

Go-live in ICT projects refers to a point in time, where a new system is taken into use.

ICT is an abbreviation of Information and Communication Technology.

ICT project within this study refers to a project that aims in providing a new IT system or –solution as an end result. An ICT project is managed by a project manager who is responsible of the overall daily work. The project manager has a specified project team to work for the project, which can vary in size between 1-2 people to dozens of people working in sub-teams. The technical implementation and modification of the particular system is done outside the project team, either inside the company or by an external vendor.

Project is a collaborative enterprise, freq. involving research or design, that is carefully planned to achieve a particular aim. (Oxford English Dictionary, retrieved September 15th 2009)

Steering group in this study refers to a steering group within a particular project. The steering group is the highest authority in the project.

2 Literature Review

In this part of the study, the existing literature on the subject is reviewed. To gain an understanding of the importance of change management for ICT project success, the concept is viewed from multiple perspectives. General issues concerning ICT projects are also studied to better understand the challenges that a project manager faces during a project. Also the link between change management in ICT projects and corporate strategy is discussed. In the literature, both the terms ICT (Information and Communication Technology) and IT (Information Technology) are used. The terms are mainly a matter of terminology in most companies and in this study will be used interchangeably.

2.1 The concept of change

When studying the existing literature on change, change management, ICT projects and organizational changes, it can be seen that change has similar effects on people no matter what brings the change. Employees will always resist change if they feel that it threatens their job (Burns 2008). Because of the universal effects of change, change as a concept will first be examined on a general level and after that the focus is moved towards ICT projects and change management in them.

Making an organizational change is not a one-time easy task. It is a process that needs careful planning, motivation, and professional execution. (Kotter 1996) Kotter emphasizes the fact that communication throughout the project is essential for its success. According to the author, it is the highest priority and the first strategy for every organizational change. As Williams & Williams (2007) describe it, people respond to

change more positively when they have an understanding of its purpose and consequences.

Clegg & Walsh (2004) suggest that in many cases too little attention is paid to the social side of change. According to the authors, the social side is actually the most important aspect in a change initiative. They also list some reasons why people are likely to persist with their existing tools and mindsets:

- There are no clear, unambiguous reasons to change
- They do not trust the people telling them to change
- They are under pressure and they choose to trust in the familiar
- Replacement tools are not proven (or worse, do not exist)
- Dropping existing tools seems and feels like a failure
- Everyone else is using the same tools
- The tools are part of the group's professional identity ("our tools are us")
- Use of the tools conveys power and legitimacy to their users
- The tools serve and further the interests of their users

Change process is a series of overlapping phases, as Williams & Williams (2007) describe it. Price & Chahal (2006) discuss the same matter and suggest that change is a process, not an event and it takes place all the time. It is rather obvious that once a large change within an organization takes place, everything is not changed overnight, but change is rather a process that takes time. For example, if organizational structure is changed, certain change steps need to be taken in order to reach the actual outcome that was sought after.

2.2 Reaction to change

According to a theory presented by Anonymous (2005), reaction to changes can be divided into four psychological stages. The stages are shock, defensive retreat, acknowledgement, and acceptance and adaptation. In the shock phase, people feel unsafe and this causes decreased productivity in working life. In the defensive retreat phase people often become angry about what has been done and they try to hang on to the past. In acknowledgement phase most people eventually acknowledge that something belongs now to the past. Finally, in acceptance and adaptation phase, most people internalize the change and move on.

According to the theory, people facing change must go through all these stages. Most people go through the phases, some faster than others, but there are also people that get stuck in the middle. The best tool for helping these people is open communication, but not with a mindset that tries to accelerate the change process. (Anonymous 2005)

2.3 Change management

Change management should focus on creating an environment in which the change can be implemented (Kemp & Low 2008). This definition gives a basic starting point when trying to understand the concept and planning change management practices.

Price & Chahal (2006) explain that change always requires a strategy. Implementing something new, such as an ICT-system requires change as well as a strategy for it. To bring about effective change, change management is needed.

Although an extensive amount of literature exists on change management, rather few of them provide a practical set of tools for it. According to Hughes (2007), many scholars avoid giving explicit tools for change management because one set of tools is not likely

to fit all situations. The author also makes a distinction between change management tools and change management techniques. Hughes says that the environment of the company has an effect on the tools and techniques to be used. By environment the author means matters such as organizational and national culture, size of the organization, geographic location, and in some cases even gender issues.

Milis & Mercken (2002) suggest that within ICT projects, change is inevitable and therefore change management is a fundamental activity in any ICT project. The authors describe change as being either change within the project or change provoked by the outcome of the project.

Change within the project means that the requirements or the specifications of a project change. This is rather normal in ICT projects because new needs emerge and the project must react. However, this can create confusion among the parties involved or even drive the stakeholders into panic. This kind of a situation must be handled by the project manager, since he/she is responsible of the communication that is crucial for the acceptance of anything new. (Milis & Mercken 2002)

Change provoked by the outcome of the project can mean a number of things. It can be divided into two larger entities: technological changes and cultural changes. Technological changes are changes in systems and tools and this means that people must familiarize themselves with new tools and ways of working. This can often be tackled by effective training and support. However, cultural changes are more difficult to cope with. Cultural changes can mean changes in the customs or the organization itself. Cultural changes can change management styles, attitudes, standards, adaptability to change and power equilibrium. These kinds of changes easily create resistance and the issues must be effectively handled by the project manager. Tools for reducing resistance include such as: user participation, effective communication, support, leadership and commitment from the top. (Milis & Mercken 2002)

Milis & Mercken (2002) explain that to reduce resistance, the future users of a new system must be involved in the project already in the early phases of a project. By doing this, a sense of ownership towards the project is created among the users and the people become more committed to the project. A feeling of a common, “our project”, is created. The authors also describe that by effective communication, the users form realistic expectations for the project and uncertainty is reduced. Communication also encourages teamwork. However, the authors state that communication must be focused rather than broad-brush and that timing is very important. Milis & Mercken state that support is very important and that the project team must be focused, committed and motivated to support the users and that complaints from the users cannot be ignored. The authors also emphasize the meaning of leadership in reducing resistance, since people management is an important part of a project and therefore also an important skill for the project manager. In addition to this, top management support is important to show the organization that the project is aiming to an outcome with the full support of the top management.

Gotsill & Meryl (2007) suggest that there are three critical steps that should be followed when implementing change in the workplace. The steps are: focus on people, communicate strategic messages and combine communication and training. These steps are explained below.

Focus on people

Whenever implementing change, the human element must be acknowledged and that resistance is inevitable. Employees need to be a part of the process and they need to be heard, since people are more likely to accept the forthcoming change if they know what to expect in each phase of the project. (Gotsill & Meryl 2007)

Communicate strategic messages

Corporate communication plays a major role in change management. When people understand the reason or reasons behind the change, they are more willing to co-operate.

However, this is not a one-time task. Once the employees have an understanding of the project and reasons behind it, continuous communication is needed to reinforce the mindset. (Gotsill & Meryl 2007)

Combine communication and training

Training is an important part of the overall change process. It helps people to understand what the project and its outcome mean in practice and how it will affect their work in the future. As communication answers the “why” –question, training provides and answer to the “how” –question. (Gotsill & Meryl 2007)

2.4 Change management framework

Price & Chahal (2006) have developed a six-step framework for strategic change management. The framework deals with change management on a rather broad level and therefore it can be assumed that it can be applied to many different situations. The framework does not provide specific tools for change management but rather gives a good outline for managing the overall process. In the next paragraphs, these steps will be introduced and explained according to the authors’ definitions.

Step one: Preparing the organization.

Preparing the organization is the most critical phase of strategic change management. It includes communicating the forthcoming change to the organization and listening to the workforce and their concerns. Paying attention to the people demonstrates respect that can be a powerful tool later on in the project. It is also important to be equally fair with everyone during the process and be as transparent as possible.

Step two: Developing the vision and implementation plan.

In this phase, the feedback from the previous phase is first analyzed. A project team is prepared and a change vision is created. One should always keep in mind that there are several paths to every goal.

Step three: Checking.

This phase is meant to be the last check before the actual implementation. All the plans should be reviewed and feedback from previous phases should be taken into consideration. It must be also made sure that all the managers in the project are fully behind the decisions made. If not, the decisions and consequences must be reviewed to ensure that all managers are behind the process.

Step four: Communications and workforce engagement.

By effective communication, everyone should gain an understanding of the effects the change will have on different groups within the organization. This way the process is more predictable to people and this reduces uncertainty. Related to the reducing of uncertainty, it is stated that all people in the organization should have an access to the project team, one way or another, to be able to discuss their concerns.

Step five: Implementation.

In the actual implementation phase, it is important to maintain momentum with continuous support from top management. Consistency is important to avoid feeling of mistreatment among different groups. It should also be realized that resistance and conflict are an inevitable part of any change process. It must be remembered that although resistance should be reduced, many of the concerns lifted by the organization are actually important points that need to be taken into account instead of merely ignoring all negative feedback.

Step six: Evaluation.

Once some time has passed after the implementation, the success of the change should be evaluated. However, this cannot be done too early to overcome initial teething problems. In many cases, middle managers are in the best position to do the evaluation since they have a good view both up and down in the organization.

The six-step framework presented above is only one of many listings of the phases in a change management process (see for example Boddy & Macbeth 2000, Millis & Mercken 2002). The main phases are similar also in other frameworks, differences are mainly in how specifically certain steps are described and whether they concentrate on the process or individual tasks.

Kemp & Low (2008) describe that change management activities include such as project championship, training, communication of system features and benefits, communication of new business processes and organizational structure, and rewards and incentives.

2.5 Characteristics of ICT projects

The role of IT has changed largely during the life span of the concept. In the beginning, the role of IT was to support daily operations, due to the fast calculation capabilities of computers. However today IT has more and more the role of an enabling function with strategic consequences. ICT projects are common in most companies since ICT has become a part of the business and competencies in many companies. Because of the strategic consequences, the emphasis of ICT projects has shifted from the technical side more to the managerial side. The projects involve people within an organization and in many cases also outside the organization because many companies use external vendors in executing the most difficult technical parts in ICT projects. (Milis & Mercken 2002)

Information technology has become a primary source for competitive advantage in many companies (Asllani & Ettkin 2007). According to Legris & Colletette (2006), organizations decide to invest to information technology, because they expect it will improve their performance in cost, productivity, or quality.

ICT costs have become a significant portion of the expenditure for many companies. ICT is also no longer considered merely as a technical service but rather a critical resource that creates organizational value. (Williams & Williams 2007) However, the authors also state that in many cases the ICT-related investments do not deliver the expected value or meet business objectives. This is a very important factor to be taken into account, since ICT projects in many cases have to compete for funding with other projects and therefore it is very important to run projects successfully to be able to justify future investments.

2.5.1 Role of External Operators

In large ICT projects, such as implementing a new ERP-system, companies usually rely on external providers. The products are complex and cannot be implemented without adequate know-how. In many cases the products must also be modified to some extent to meet the requirements of the company.

As Karlsen & Gottschalk (2006) explain, a growing number of organizations turn to IT vendors in order to access new technologies and their skill sets. The authors describe that IT outsourcing often includes management and operation of computer facilities, the maintenance of information networks, development of computer infrastructure and applications, and training and support of employees. They continue by listing the negative consequences of using external vendors, which can be for example loss of control and influence, poorer service quality, higher than expected costs, and loss of skill and competence.

Although great amount of additional knowledge is gained through using external operators, this model of doing projects also creates some problems. For example, it is very hard to control the vendor involvement and to maintain working relationships between vendor and client. The highly competed environment also often leads into a situation where the IT vendor overpromises regarding schedule and budget to win the initial bidding phase. However, overoptimistic schedules and budgets are dangerous for both the vendor and the client. (Taylor 2006)

Weck (2005) discusses the issue of inter-firm projects. The author describes that common problems in these projects include such as different methods of planning and managing projects, lack of a joint governance mechanism and reporting system, different interpretations and communications channels, unclear responsibilities, different perceptions of quality and change management. Weck also emphasizes the importance of a cross-organizational group for effective management. The environment of ICT projects is often very complex and the cross-organizational group helps in taking into account diverse aspects.

Kurupparachchi et al. (2001) state that it is more likely that an ICT project fails due to poor communication between the technical people and the end-users rather than because of technical problems. This is perhaps one of the most common challenges regarding the co-operation between the external provider and the customer.

As presented by Taylor (2006), it is quite common that the IT vendors do not always give a realistic picture about the project challenges and schedule. Therefore it is crucial for a project manager and the client organization's management in general to manage the risks right from the start. A good requirements analysis must be done during the bidding-phase to have a mutual understanding about the time, cost and scope of the project. Taylor also lists the key risks that are involved when dealing with an external provider. The six key risks are

- Schedule and budget management
- Vendor staffing
- Vendor understanding of requirements
- Client expectations
- Vendor team morale
- Change management

All in all, it can be stated that in most cases external vendors are needed in order to get the project done, but some issues seem to make the co-operation challenging. To handle these issues, the project manager must concentrate in planning the project well, manage the project well to execute the plans, and to communicate constantly with the vendor to be able to control the process. According to Milis & Mercken (2002), managing external relationships must be active and is in fact one success factor of an ICT project.

2.5.2 Uncertainty in ICT projects

All projects have certain restrictions on time, cost, scope and defined demands for quality. Projects are complex endeavors and planning is difficult. In every project, there are some constraints that either the customer or the project team is able to recognize at an early stage and during planning. (Perminova et al. 2008)

Asllani & Etkin (2007, pp. 32-33) explain that traditional techniques of project management have become inadequate to monitor project uncertainty. Better knowledge about the system and the project in general are needed to decrease the uncertainty and risks within a project. The authors also emphasize the importance of making a distinction between risk and uncertainty. According to them, “risk is a condition that has an effect on the project outcome”, whereas “uncertainty is defined as the absence of information about a given risk factor, which in turn leads to the inability to accurately predict the outcome of a given system”. What can be drawn from this is that as more

and more information is received about a given project, the less uncertainty there is, and therefore the risk of failure is smaller.

2.5.3 Success factors in ICT projects

In this part of the study, three lists of general success factors in ICT projects are introduced. These success factors are the basic preconditions that make it possible to run an ICT project. The findings of three different studies are discussed to gain a picture what are perceived to be the most important pieces behind success.

Kuruppuarachchi et al. (2001) present a list of success factors in ICT projects. The list is as follows:

- Project mission (clarity of goals and direction)
- Top management support
- Project schedule/plan
- Client consultation
- Personnel
- Technical tasks
- Client acceptance
- Monitoring and feedback
- Communication
- Troubleshooting (ability to solve problems)

The authors continue by saying that for ICT projects, also a post-implementation strategy is very important. The success of an implemented solution can only be determined by it's users, once the system has been taken into use and by ensuring that there is enough support also after the launch, there are better chances for success.

Boddy & Macbeth (2000) have defined a list of practices that is recommended to all who are about to implement change. Their list of 11 practices is divided under three main topics and is as follows:

- Project planning
 - Setting clear goals
 - Ensuring agreement with goals
 - Having senior management commitment
- Project structure
 - Creating structures to manage the change
 - Ensuring adequate resources
 - Having a powerful and respected champion
 - Appointing a capable project manager
- Project implementation
 - Creating a project team with the right membership
 - Preparing a detailed yet flexible project plan
 - Consulting widely with those affected
 - Setting up adequate controls

The authors point out that it is very important that the management creates clear structures within which to manage the change. This is rather obvious since without good planning and structures, it is difficult to prepare the communication and needed change management.

Milis & Mercken (2002) have also defined a list of success factors for ICT projects. The list includes the following factors:

- Good selection and justification
- The project definition
- The project plan
- Management involvement and support
- The project team
- Change management
- Proper project resources
- Managing relationships

Milis & Mercken (2002, pp.107) emphasize that the system or tool must be selected with care to fit the needs of the company. The authors describe that the situation is similar to human medicine by saying: "...it is the combination of good diagnosis with

the use of the right drugs that cure the patient. Using drugs without a proper diagnosis is potentially lethal.”

The importance of project definition cannot be neglected. The definition phase must be done with care and it should be used to ensure the alignment with the business and the ICT. As a part of the definition, the scope of the project must be drawn clear to set the boundaries of what to do and what not. To be able to do this, a project manager must have knowledge on user requirements and knowledge from the IT experts, a realistic view on the possibilities – and maybe even more importantly – the limitations of IT, and sufficient experience to make realistic estimates of the resources required. (Milis & Mercken 2002)

The three listings presented above suggest that there seems to be some sort of consensus among the authors about what are the basic building blocks of a successful ICT project. First of all, all of the authors agree that planning is crucial for any project. Second, they agree that enough financial resources as well as time must be available for a project. Third, the authors state that the right person must be chosen to run the project and in addition to this, the right people must be chosen to the project team to help the project manager. Fourth, top management support is needed according to the studies. Finally, support and change management need to be in place.

2.6 ICT projects and Change management

Hammoud (2008) explains that any new IT-project implies changes in processes, operations, policies, or business. Change management helps in defining these changes, quantifying them, and planning for their execution. The author adds that projects that implement change have better chances for success. This can be applied to ICT projects as well as any other projects.

Projects involve a great deal of decision-making. By having the right information at the right time, a project manager can make good decisions that take the project into the intended direction and support the change that is wished to take place. However, the situation is not always this simple. This is mainly because change in culture takes more time than change in technology. (Goodman 2006)

According to Kurupparachchi et al. (2001), there are two processes that distinguish project management from general management. Whereas general management includes planning, executing, and controlling, project management also includes initiating as well as closing the project in addition to the three main components of management.

Weck (2005) explains that change management can be considered with two different knowledge areas, which are risk management and project integration management. Risk management is a quite traditional way of looking at change, e.g. it –slightly exaggerated - concentrates on seeing all change as negative. However, more and more emphasis has been put to project integration management during the past years, since it sees change management as a process of overall control. This makes perfect sense since ICT projects are more and more complex and change is almost inevitable, which again means that it cannot all be negative.

Kemp & Low (2008) discuss the issues faced during many ERP-installations and the authors state that many such endeavors fail because organizations underestimate the effort involved in change management. The authors continue by describing that change management is particularly important in adoption, adaptation and acceptance phases of an ERP-implementation.

Helo et al. (2008) suggest that as much as 90% of all ERP-projects can be considered as failures in terms of project management. The authors further explain that the key risks in these kinds of implementation projects come from senior management commitment

to the project, communication with the users, training and user support. These are all soft factors and can be overcome with change management.

For an ERP-system (or any other ICT-solution), change management is needed to prepare users for the introduction of the new system, to reduce the forthcoming resistance to change during the project, and to influence the attitudes of the users towards the new system. As stated already previously in the study, change management should focus on creating an environment in which the change can be implemented. (Kemp & Low 2008)

As new IT-systems and procedures are introduced, people and processes experience significant change, learning, adaptation and growth. These changes cause intra-organizational tensions, which must be solved to avoid project failure (Kuruppuarachchi et al. 2001). Williams & Williams (2007) suggest that while ICT systems are changing and new ones are installed, change is becoming almost “business as usual”. The authors suggest that this is the reason why change must be embraced, not blocked.

It may also be that some departments or locations need more change management than others. For example in an ERP-installation, it may be that the HR-department needs more change management than some other department to cope with the change that a new system brings to their everyday work. Also, if the installation changes the processes for handling the stock, it may be that the logistics department needs more change management than others. (Kemp & Low 2008)

Motwani et al. (2002) suggest that IT led projects often fail to capture the business and human side of processes. The authors emphasize that the person leading the project or the change, must have faith in the new order, e.g. readiness for change. They also point out that it is important to have active change agents to gain the desired end result. In addition to this, they say that bureaucratic, strategy led cautious implementation processes pay off in the long run. The ideas of the authors can be simplified by saying

that the project manager must be strong and ready for change and the project team must consist of people that are willing to bring about change within the organization.

Colbourne (2006) discusses the concept of leadership in relation to change management. The author emphasizes the fact that great leadership works through the emotions and it begins and ends with people. Colbourne continues to explain that leadership is a behavior, not a role and it is all about relationships. By keeping all this in mind, the author comes down to the point that one of the tasks of a change leader is to influence and at times change the organizational culture. According to him, employees must take part in creating the new culture and space for emotions must be given.

In addition to active change management towards the organization, a project manager should also remember change management within the project team. Managing the relationships in the team is perhaps the most important tool for this since a project team usually consists of people around the organization that do not necessary know each other that well before the project. Due to this, the relationships between the people must be managed to ensure a well functioning team. Good relationships become important usually when the project comes to a tight situation and people must seek for motivation. If the project team has a clear picture of what they are working for, they are more likely going to find the strength and motivation to keep on going for the common goal. This is also important because the project team members have colleagues also outside the team and both good spirit and bad spirit easily communicate the overall situation of the project to the colleagues and the overall organization. (Milis & Mercken 2002)

The ideas of leadership presented above are very important for ICT projects. After all, implementing a new system is much about creating new ways of doing things and therefore creating new organizational culture. Projects are different and due to this, a leader must always find a right way of bringing the change in for each situation. (Colbourne 2006)

2.6.1 Choosing the right people

Choosing the right people to work for a project and to bring about change is crucial for the success of an ICT project. In many cases, a change agent is needed to make change possible. This is also true when it comes to ICT projects. In addition to the change agent, a change management team is sometimes needed. These issues will be discussed in this section of the study.

Choosing the right person as the project manager and taking the right people to the project team are among the success factors of an ICT project. The project manager should have the necessary skills in project management as well as in communication. Having project experience helps in making estimates, identifying risks and managing large number of different tasks. A project manager also has to possess social skills to be able to master conflicts and even to avoid them. In fact, the social skills of a project manager are perceived even more important than general management skills, and ICT skills are considered to be least important since those skills can come from the project team. (Milis & Mercken 2002)

Milis & Mercken (2002) explain that the members of the project team should have complementary skills, to broaden the competence of the team. ICT projects have become more and more complex and have greater impacts on the organization and therefore the social side of projects has become more important. Because of this, the composition of a project team should be looked both from a social as well as a technical viewpoint. The choice of team members should not be based merely on their technical skills but also on their social skills.

Kirsch (2006) discusses widely the concept of a change agent in ICT projects and how to choose the right person as a change agent. According to the author, a change agent needs to be a person who sees the big picture, understands the differences between technologies, solves problems efficiently, gets a buy-in from the top management, and

gains acceptance from the end users. To clarify, it must be stated that the project manager should always be the number one change agent. To better understand the requirements, the ideas of Kirsch will be discussed below. A change agent needs to be a person who has:

Holistic view of the company.

A change agent has to have a good overall picture of the company. It is beneficial if the person has worked in different departments in the organization to have a good view of how things are done around the organization.

Technical understanding.

A change agent needs to have understanding about different solutions on the market or be a quick learner to gain the understanding. This is crucial because the change agent needs to demonstrate the technology internally and externally to get approvals, to build consensus and convince clients – internal or external.

Troubleshooting ability.

As stated already earlier in this study, problems will always arise and it is essential to have capabilities for solving them. The problems are multiple and can arise for issues concerning people, processes, technology, etc.

Passion and drive.

A change agent must be committed to reshaping any parts of the company's culture that would resist change. Passion and drive are needed to overcome the difficulties and to be able to keep up the momentum.

Respect among peers.

This capability comes important when the difficult times of the project are at hand. People are likely to follow the change agent during good times but the question is: will

they follow during the bad times and down the new path? People must also believe that the change agent understands the effects that the project has on people.

Support from top management.

If top management support is lacking, the project is doomed from the start. Projects also require resources and support that can only come from the very top.

Risk tolerance.

Simply put: A change agent needs to have a backbone. Projects are full of risks and uncertainty and that is something that the change agent needs to tolerate.

Kirsch (2006) continues to explain the requirements of a change agent by saying that the person should not be chosen among top management, because the person needs to have a good picture of the daily tasks that take place.

In addition to the need for a project manager to have an overview of the company, the project team must also have a clear view of the overall process. People in the team must know the phases and development of the project, in order to know what they are working for. By keeping the project team informed of the overall situation, the project manager is able to create motivation among the team. (Milis & Mercken 2002)

Hussenot (2008) also discusses the key persons in ICT projects, although he calls them spokespersons instead of change agents. The author emphasizes the importance of spokespersons for the overall project, since they are usually the ones who establish the link between the end-users and the ICT-people. As Colbourne (2006) suggests middle managers are often in a key position when implementing change. The author emphasizes that the key is to provide the middle managers with enough information about the change, since that ensures that they are engaged to the change and can help in changing the attitudes of the other employees towards a more positive one.

Having enough people within a project team is often a challenge in many companies. This is often a prioritization problem, since resources for projects are in many cases taken from the normal business activity or from other projects. This is also one reason why the top management support must be in place; without it, it is challenging to get the necessary resources. A project manager should also have a buffer of resources if unexpected situations occur and more resources are needed or someone in the team must be replaced. (Milis & Mercken 2002)

To put together the thoughts by different authors, it can be said that the selection of the project manager and the project team is an important part of the overall project. The project manager must be chosen with care and the person must withhold experience as well as communication skills. The person should have the capabilities of a change agent, in order to be able to run a project successfully. The project team on the other hand should be a good mix of technical skills as well as social skills, to make the set of skills as broad as possible.

2.6.2 Effect of the environment

Environment has a big effect on the change management strategies and ICT projects in general. The environment around ICT project is often very complex due to for example other projects running at the same time. Continuous environment screening is an important part of effective change management, since if the environment changes, it often has an effect on the project at hand. (Weck 2005) Changes in the environment can show for example as change in budget, scope or schedule. Other projects may also need resources from the project at hand and this obviously creates challenges.

As Bygstad & Lanestedt (2009) put it: “no project is an island”, describing the fact that every project is heavily dependent on its organizational context. Weck (2005) states that environment also has a big effect on the change management strategies. The author

explains that if time is scarce and there are for example multiple projects going on at the same time making the environment more complex, change management becomes more and more challenging. Biggest effects can be seen in decision-making and hierarchy within the project.

In addition to the intra-organizational environment, also other external factors may have an effect on the project. Such factors can include for example project's political, economical and social environment, relationship with the local community, competitors, legislation and agreements with the labor unions. However, it depends on the company and the project whether these factors have an influence or not. The project manager must consider the external stakeholders carefully to be able to monitor and manage, or to avoid them. All in all, if such external stakeholders have an effect on the project, communication must be active, in order to gain avoid possible problems in acceptance of the project or to reduce change resistance. (Milis & Mercken 2002)

2.7 Overcoming problems in ICT projects

As mentioned earlier in this study, a large portion of ICT projects ends up in not meeting the set goals or even fail completely. There are many reasons to the high failure rate and in the next paragraphs the most common reasons will be discussed. The importance of change management in solving the problematic situations is also presented.

Most successful projects stress the importance of overcoming resistance to change. In addition to this, effective communication is considered to be the most efficient way of doing this. People try to avoid situations filled with ambiguity, because ambiguity usually means the loss of predictability. Because of this, resistance to change occurs in every change initiative and it should be anticipated as a natural human behavior.

However, it should also always be dealt with and as stated, communication is the most efficient way for it. (Sherer et al. 2003)

According to Williams & Williams (2007), reasons for failures in projects are usually either technology- or business-related. The technical problems can include such as the project expanding due to scope creep, complexity of integrating products, legacy systems, and new data. Business problems include for example not developing new workflow processes, not adapting the structure of the organization, and keeping old cultural practices in place. The authors continue to list reasons for unsuccessful projects, such as failing to match the innovation/implementation with the environment, lack of follow-through, and lack of practice and training in the innovation. The research also states that management and the user-base of a new system often have very different perceptions of the relevance, readiness and resources of a particular project. According to the authors, the user-base often voice out comments like “don’t know”, “they don’t tell us anything”, “to cut down the paperwork”, “greater control”. Comments like these in most cases are due to insufficient communication of the purpose and benefits of the new system.

Ouadahi (2008) states that when people are judging a new ICT-product, it is not always about what the product is actually like, but about the perception the users have about it. He also points out that attitude towards a project is heavily influenced by the perception and expectations of the future users. Ouadahi says that perceived effects on job and organization are a matter of great concern. As said, this is a matter of perception, which only emphasizes the importance of effective communication. The author continues by reminding that the effects of a new implementation will last for much longer than the actual project.

Three critical components for an ICT project success are people, processes, and technology (Hammoud 2008) From these three, people is the most important but that doesn’t mean that the other components could be neglected.

Williams & Williams (2007) point out that change always involves loss anxiety, struggle, uncertainty, being lost confronting more information that can be handled. The overload of information is particularly true in ICT projects, since in addition to the actual change, usually a huge amount of information and new programs and processes must be internalized within a rather limited time period.

Kemp & Low (2008) suggest that managing the change that occurs during the implementation at an individual or departmental level rather than merely managing the overall situation has a positive effect on the implementation climate of a new solution. This is because the implementation climate is actually the sum of employees' observations and experiences regarding the innovation. When change is managed effectively on individual or departmental level, the big picture is likely to be more positive. Also Ouadahi (2008) explains that factors in the individual level have a large impact on the total success of implementing a new system.

Sherer et al. (2003) suggest that many IT initiatives fail because they focus on the implementation of the solution rather than the adoption of the solution. What the authors mean by this is that there is a need to concentrate to the overall process, not merely to the tool or implementation.

Perminova et al. (2008) state that although projects are characterized by complexity and ambiguity, they are actually unique only to a certain extent. What this means for trying to overcome the different issues and problems in projects is that experience from previous projects is something that should always be used. Comparing situations to previous projects can reduce uncertainty. Standardization and modularization of projects can be done, best practices can be implemented, and lessons learned can be collected. All these measures can help in effective change management. This also suggests that one part of change management is to collect information during and after the project, to enable better planning for the next projects.

2.8 Training of people

Kemp & Low (2008) explain that whenever implementing an ERP-system – or any other ICT solution – users require ongoing support from the organization in order to achieve implementation effectiveness. Ongoing support mainly means training, maintenance and equipment upgrades, training being the most important during the implementation of the new system. The authors also state that user involvement and user training can impact user's feelings towards a new system.

Training is an essential part of any ICT-implementation. Without proper training, the benefits of a new system will not be reached and the investment does not pay off as planned. Some important factors concerning training should be taken into consideration. First of all, training must be included in the planning and the structure of the trainings has to be very well described. Second, all necessary people must be trained before go-live, in order to keep business momentum going on after the implementation. Third, post-launch support must also be in place. After all, people will always have questions once they start using a new system and also some problems with the technical performance of the system may arise. (Williams & Williams 2007)

All in all, training is a part of an ICT project that should never be neglected. It can be a turning point in managing the change resistance since in the trainings the users get to use the system for the first time and get their first empirical picture of the system. However, trainings can also have a negative impact if not planned with care. It must be taken into consideration that trainings take time and all users must be trained before the system is taken into use.

2.9 Change management and corporate strategy

Hammoud (2008) states that: “Change management is the application of knowledge, skills, tools and techniques to incorporate change into a project or into a strategy”. Change can be generated either in strategy or in the context of the project, and therefore those two must be aligned. The author describes that change management in fact is the measure that aligns strategy and projects. Therefore the importance of change management is very substantial not only in executing projects, but also in executing corporate strategies.

Kurupparachchi et al. (2001) describe that IT projects are usually part of larger reforms of organizational systems and procedures. It is recognized that real benefits occur only when ICT investment is accompanied by business change (Williams & Williams 2007). Hammoud (2008) states that the more change is integrated within the whole company, the better chances a single project has for success.

Hammoud (2008) describes the position of most ICT projects quite well as he describes that long-term business goals are achieved through strategies, and projects are undertaken to realize these strategies. Price & Shahal (2006) state that organizational culture must be aligned to support new processes.

By looking at the above statements by the different authors, it can be seen that ICT projects in most cases are a part of a larger organizational change or development. This helps in understanding the importance of the projects and emphasizes the need for top-management support in running the projects successfully.

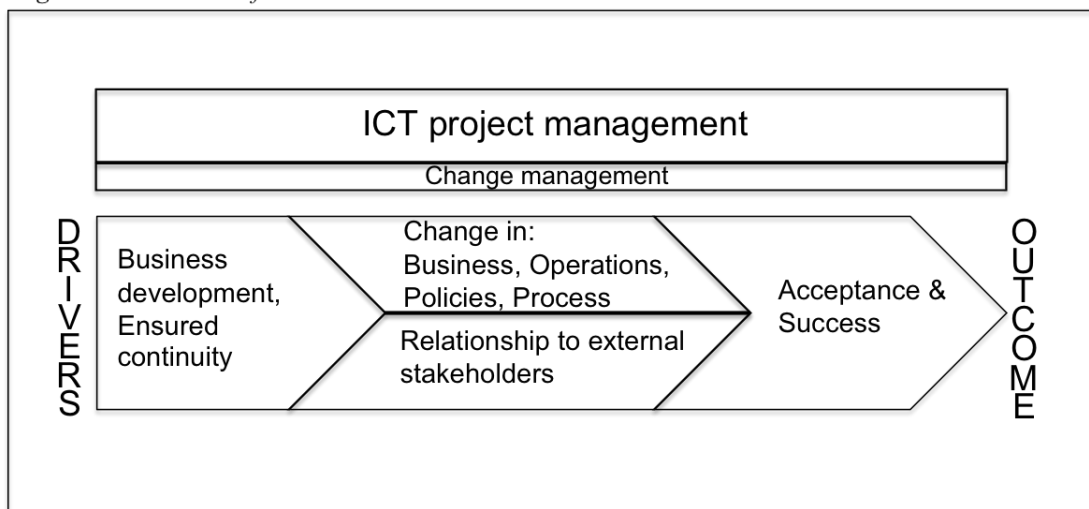
Although corporate strategies are usually executed with projects, the management must realize that to support a well-planned strategy, one must also plan the projects with extreme care. According to Hammoud (2008), one common reason for failures in

projects is the fact that management is executing projects that in fact are not aligned with the business strategy. The author notes that a change in strategy without a corresponding change in project leads to a misalignment with the two.

2.10 Theoretical framework

In this chapter the theoretical framework of this study is reviewed. The different theories presented in before in the study are brought together to form a frame for the forthcoming empirical part. The framework views ICT project management as the overall process that enables ICT project success, and change management as a crucial part of the project management. The theoretical framework is presented in Figure 1.

Figure 1. Theoretical framework



The framework shows the main drivers behind ICT projects, which are business development and the ensured continuity of ICT systems. As described previously in the text, ICT has become a part of business development and a source of competitive advantage. This also explains why ICT projects are so common especially in large organizations; after all, practically every time when the business is developed,

something must also change in systems or a new functionality must be added. ICT projects also ensure that systems are up-to-date and this way eventually the continuity of daily business operations. In majority of companies ICT systems play such a big role in the daily business that if a system fails, the whole business of the company is jeopardized.

ICT projects are largely about change. The projects bring change in business, operations, policies and processes of the company. This often causes change resistance among the people affected by the project within the organization. The mere implementation of a new system is also not enough, since every change in processes or operations require retraining of the employees. The existence of an external vendor also adds extra challenges to the project management. In fact, it may be among the largest concerns of a project manager, or at least the co-operation takes a large portion of the project manager's time.

It must also be noted that change is viewed differently and has different effects on different people within organizations. In large projects, the organizational changes or changes in policies or processes usually affect the majority of employees within the company. However, some projects or parts of a project may affect only a part of employees, or it may be that the majority of employees do not even notice that a project has been conducted. The project manager needs to have the necessary competencies and capabilities to be able to cope with the situation.

There are also differences within the people working for a project. A project manager or top management of a project may view a project very differently. The management of a project sees practically all that is happening in a project, whereas a member of a project team may only see a small portion of the whole picture. This factor is taken into consideration also in the empirical part of this research, by dividing the interviewees into three different groups according to their position within a project.

This study suggests that by using change management as an integral part of the overall ICT project management, a project manager is able to better cope with the challenges raised by the factors presented above. As a result, a project has better chances of being accepted by the internal stakeholders – e.g. the future users of the implemented system or solution - and eventually of being a successful project.

3 Methodology

3.1 Research Method

The concepts of change management and ICT projects are both studied quite extensively in the existing literature. They have also been combined in some studies, but very few clear models for practical execution are provided. The concept of change and change management is greatly based on individual's perception of a particular situation and therefore it is hard to provide any specific data that could be generalized to every situation. This study is conducted as a qualitative study, to gain an understanding of how ICT projects are managed in real-life and what kind of a role change management plays in the process.

To gain a holistic picture of the topic, multiple sources of data were used. Empirical data was gathered from a rather extensive round of interviews, to receive enough information for making the final findings. As Yin (2003, pp.83-85) suggests, multiple sources of evidence should always be used when conducting research and that "no single source of evidence has a complete advantage over all the others".

The case company was chosen based on two primary reasons. The first reason was that the company has an ongoing ERP-installation project and in addition to that, has experienced several other ICT-related projects during the past years. Due to this, a rather large group of people within the company has experience on working in ICT projects. This enables gathering the interviewees from various parts and levels of the organization. By doing so, the research data provides a wide variety of opinions since people in different positions in their everyday work can be assumed to have different opinions about ICT projects and their effect on the daily work of the individual. In

addition to this, the experience of people varies to large extent due to the differences in their positions in projects and the projects themselves.

Another reason for choosing the company was that the researcher had existing contacts to the company and therefore the access to people and data could be ensured. The initial contact to the right people within the organization already existed and this shortened the time needed for arranging the interviews. This also helped in gathering a large enough group of people to the interviews with wide scale of expertise and experience on working in and managing ICT projects. As Dutton & Dukerich (2006) explain, gaining access for research is not easy and in addition to that, not a one-time task but needs to be maintained. To do so, the researcher was in contact to the company and the interviewees more than once before the actual interviews, to ensure that the interviews provide all the necessary data.

3.2 Data Collection

The data for the study are collected from various sources. Academic journals, dissertations, as well as other literature are used for secondary data in the literature review. The empirical data are gathered from semi-structured interviews. Yin (2003) points out that interviews are indeed among the most important sources of information. Greiner & Metzger (1983) also explain that semi-structured interviews provide a wide variety of facts, perceptions, feelings and opinions that a researcher is unable to gather by any other method.

The interviews were conducted as individual, anonymous interviews that each was about one hour in duration. The interviewees were observed as three different groups. The first group (Group 1) consisted of people who were or had been working inside an ICT project team. The second group (Group 2) consisted of people who were or had been working in ICT projects as a project manager. The third group (Group 3) consisted

of people who were or had been in the top-management of a project. Two sets of questions (see Appendix A) were used in the interviews; one for people with project-team experience and another for project managers and top-management. The list of interviewees can be found from Appendix B. The division was made to gain a picture of how people in different positions in projects perceive project management and the selection of people to different roles in projects. The division also enabled the interviewer to appear naïve about some of the question, especially among the people with no experience on managing projects. Yin (2003) points out that this approach can provide fresh commentary about the topic and this again gives a good picture of the thoughts of the interviewee. The differences in the questions were mainly about leaving out some questions that people with no project management experience cannot answer.

In this study, a project manager refers to a person who is responsible of the overall daily work and progress of a particular project. The project manager operates under a project steering group that is the highest authority in the project. A project steering group usually consists of people from the top management of the organization and in some larger projects the steering group can even be identical to the organization's steering group. The project manager has a project team that helps in running the project. Number of people in the project team varies between projects and can be anything between 1-2 people to dozens of people working in sub-teams. In many cases both the project manager as well as the project team may be doing their daily work in addition to the project work. However, in larger projects the project manager and the team can be assigned only to the project.

A preliminary set of questions was sent to the interviewees before the interviews to give the people some idea what the interview is about. This also saved time during the interviews since the interviewees already had a picture about the contents of the interview. However, the whole set of questions was not sent to ensure that responses to the questions were given without too thorough planning and to ensure discussion around different topics. Some form of preparation and planning could be seen among some of

the interviewees; some brought material with them to the interview and some had prepared to show information for example from the company intranet.

The people were chosen based on their previous experience on working in ICT projects. The interviewees were chosen from different parts of the company, with different levels of experience about ICT projects. The aim was to gain a broad view of how different people in different positions – within the company as well as in projects - see the practical side of the ICT projects; which issues they perceive as important and what role does change management play in general ICT project management.

3.3 Reliability and Validity

Due to the fact that the interviews were conducted as semi-structured including open discussion, the length and thoroughness of answers differed. However, as the interviews were conducted as anonymous without giving out the person's positions in neither the organization nor the organization itself, it can be assumed that the answers were honest and reliable. It must always be noted when conducting an interview that people may understand the questions differently and that obviously has an effect on the given answer. This was tried to avoid by forming the questions in such a way that the danger of misunderstanding is minimized.

In a qualitative study, the basis of reliability is the researcher. Therefore the reliability of the study should be based on the whole research process. (Eskola & Suoranta 2005) Hirsjärvi & Hurme (2008) explain that the reliability of a research can be ensured by using high quality data, planning carefully the interview outline, planning additional questions in advance, analyzing the interview data carefully and by giving the interviewees an opportunity to comment on the interpretations of the interviewer. In this study, these factors were taken into consideration. In addition to the set of questions, some additional questions were used in some interviews to gain additional information

to a specific question/topic. During the interviews the respondents were also asked additional questions for the purpose of making sure that the researcher has understood the interviewee correctly. The interviews were recorded to be able to gain a realistic and thorough picture of the opinions of the interviewees when transcribing the data.

4 Findings

4.1 Introduction of the case company

The case company is a Finnish company that operates in several countries in Northern and Eastern Europe. The name of the company will be kept anonymous, as well as the names of all interviewees.

The company has a very wide range of products and services, which are sold to B2B-customers. Total sales of the company add up to almost €2 billion and the amount of employees is over 3000 (in year 2008).

The company has conducted several ICT projects during the past five years, and at the moment an ERP-implementation project is ongoing. This particular project is in the testing phase, which means that the actual system already exists to a large extent but is not yet implemented for common use. First operating countries of the company will start using the system during year 2010. The ERP-project is an excellent example since it involves a very large group of people within the organization, and once implemented, affects practically all employees. However, the ERP-project is not the only example of projects in this study.

The company does not operate in ICT industry, and therefore uses external providers and partners in projects. External operators provide the technical know-how during the projects and external companies are also used for continuous support and development. The ICT-infrastructure of the company is also outsourced. External partners are also used for implementing the technical side of systems and making the possible modifications to them.

As stated in the beginning of this study, the research concentrates on investigating larger ICT projects, such as the implementation of an ERP system or renewing other systems or solutions that are used by the majority of employees within the company, since these projects affect a large number of people.

The interviews were conducted as, individual, semi-structured interviews. A variety of questions were asked about the project-experience of the respondent and how the person perceived different issues concerning the project/projects he/she had worked in. The term “change management” was avoided in majority of the interview questions to keep away from steering the interviewees to any particular direction in their answers.

4.2 Phases of an ICT project

All interviewees were asked about the different phases of an ICT project. They were asked to describe in their own words what are important phases of a project and to pinpoint the most important phase or phases. The purpose of this question was to see whether all the people working for a project are aware of the overall structure of the project. As stated in the literature by Milis & Mercken (2002), the project team must be aware of the overall phases and process of a particular project.

Due to the fact that all interviewees were or had been working for an ICT project, the phases of a project were rather clear to them. However, there were some differences in the answers; project managers explained the phases all the way from the point where the need for a project is recognized, whereas people in Group 1 didn't mention the very first tasks of a project.

The most common phases that were mentioned were:

1. Planning & specifying the needs
2. Gathering the project organization
3. Searching a suitable partner
4. Executing the actual work, creating the system
5. Testing the system
6. Implementation
7. Maintenance

Different people saw some differences in the importance of different phases. All agreed that planning is among the most important ones, but some variation could be found from the opinions. For example, a person who has been mainly responsible for technical support saw the actual execution phase as being the most important. On the other hand, all project managers emphasized the meaning of trainings and testing for the success of the whole project. One person explained the relationship between testing and trainings as follows:

Testing should be used and seen as one way of training the people. That is where they actually learn.

The same person also noted that in addition to the mere test of the technical platform and training the people, the testing phase has other meanings that reflect the entire situation of the organization. The respondent described the testing by saying:

It is not about testing the system, it is about testing how the organization works and operates.

As mentioned, all interviewees pinpointed planning as being among the most important phases. However, some of the respondents stated that due to the lack of a clear ICT-development –roadmap, projects are often driven by a must, for example because an old

system is so old and unstable that it threatens the daily business. This leads to a situation where the project is in a hurry right from the beginning and the initial planning-phase is left too short. According to one interviewee, in this kind of a situation the only solution is to work fast and accept the fact that all plans are not as thorough as they should. As the person put it:

I told the project owner that this can be done but everything won't be done by the book. There was no plan, I just made a simple task list for myself that I followed during the implementation.

One interviewee also pointed out that the planning is more than the mere specification of the needed functionalities and other features of a system. The person explained that internal planning is also crucial to ensure that internal resources, processes and capabilities are in place.

The findings above support the literature about the phases of ICT projects (Kemp & Low, 2008; Williams & Williams 2007). As stated by many of the interviewees, planning, testing and training are among the most important phases. There are differences in how the different phases are done in projects that vary in size, but the phases of different projects are usually somewhat the same. However, what is important to realize, is that the phases must support each other as described by one of the interviewees when saying that testing should be used as a part of training. Another important point is that the phases have more meanings than the most obvious. For example, testing is not only about testing the system but also about testing the organization.

4.3 Choosing the right people to projects

The respondents were asked to give their opinion on what basis people should be selected to an ICT project. People in Group 1 were mainly asked to give their opinion, whereas Groups 2 and 3 were asked to describe how they have done it and what is their experience on what are important criteria for making the selection.

People who had been working in a project team (Group 1) didn't have a clear picture of what are the requirements for a project manager. However, many of them did mention that a project manager should be a person who has a clear overview of the project. One person also noted that usually it is a person leading the department that is responsible for the project. All of the people in Group 1 stated that the project team should consist of people around the organization to form a good general picture.

The project managers and the top-management –people (Groups 2&3) had more specific answers to the questions. All of them agreed that a project manager should be a person who has a good picture of the overall organization and the business. They also stated that a project manager should have some experience on ICT projects, preferably on managing one. The respondents seemed to agree that a project manager must have good communication skills. It was also stated that it is beneficial for a project manager to have some experience on the particular ICT-system or solution, to be able to discuss the needs with the external supplier. However, this was not considered to be a must, since this knowledge can easily be acquired either by studying or by including a technical person in the project team. Some of the respondents also noted that the selection of a project manager cannot depend on status inside the organization, nor must he/she be from the ICT-department.

Although the respondents seemed to have a rather similar picture of how a project manager should be chosen, the reality is not as simple. One of the respondents said:

We are not in such a good situation that we would have an internal Project management –office that would provide us with project managers, but we have to choose them by using different criteria. We always try to get the best person but often we have to get whoever is available. However, the person must have some project experience and know something about the content (of the ICT-system) to be able to challenge the external partner if needed.

Another person explained that sometimes problems arise because of organizational hierarchy and personal desires. The situation was described as follows:

The project manager is the most important person in the project. The most competent person should be always chosen but too often the choice is based on organizational status; whoever “belongs” to the project manager position. Often these people don’t have experience or training in running ICT projects.

All in all, the characteristics listed by the respondents seemed to be in line with the existing literature. As Milis & Mercken (2002) describe, a project manager must possess social skills, project experience and managerial skills to be able to run a project. In addition to this, the project team members must have complementary skills to broaden the total competence of the team.

4.4 Communication in ICT projects

The interviewees were asked about the general communication of the projects they have worked on, as well as specific tools and processes that may have been used. The

interviews showed that it is very much dependent on the organization and project what kind of communication is needed. This section describes the forms and planning of communication, but the actual influence of communication is discussed in the next section, together with the most common challenges and ways to face the challenges.

According to the interviewees working for the ERP-project, communication in the project has been extensive. Many channels have been used to get the needed information to everyone in the organization. Used methods and channels include such as: wide use of intranet, emails, meetings, conferences, internal magazines, a road trip to all company locations in the beginning of the project, etc.

In the ERP-project, there is a separate communications department for the project that takes care of planning and executing the communications. In the beginning of the project, a thorough communications plan was formed to give some basic directions for executing the everyday communication. Due to the fact that the project influences everyone in the company in all operating countries, the communications department must plan the messages more carefully than if it was only people in Finland that were affected.

People, who are not working for the ERP-project, gave rather different insights to project communication. According to one respondent, it makes no sense making thorough communications plans for small projects, since there is no need for other communication than emails between the team during the work. A more public message is then usually sent once the project is over, where the whole organization is informed what has been done. The person also explained that there are some projects that do not need any communication outside the project team since other people in the organization do not even notice that the project took place.

Most respondents seemed to agree that communication is an essential part of a successful project and it depends on the size and type of the project how it should be designed. One of the interviewees quoted a more experienced project manager and said:

Project management is three things. The first is communication, the second is communication, and the third is communication. Communication, communication, communication.

The people also stated that the same message does not necessarily work in every situation, since people view projects and change differently and therefore need different messages. The interviewees pointed out that in addition to the different message, the way of introducing the message must be planned differently for different people.

4.5 Challenges in managing ICT projects

All interviewees were asked about the different challenges they have faced in their work in a project, as well as about the general challenges that they have witnessed inside the project they have been working on. People were also asked to give their perception on what are the best tools for overcoming the different problems and challenges.

As it became evident from the literature, ICT projects face a lot of challenges and many projects cannot deal with them and end up failing. During the interviews, it became clear that challenges appear in every single project and the challenges usually appear around the same issues. In the next paragraphs, the most common problems according to the interviewees will be introduced, as well as some opinions of how they should be handled.

People in Group 1 all stated that tight schedule is the most common challenge in ICT projects. It could be seen that especially the people who were working for the ongoing ERP-project, were more or less stressed because of the schedule. One person also noted that at times their team has to work very long days but sometimes there is nothing to do and people become a bit fed up with the waiting. The person also said that there is no room for losing any of the people in the team, since that would make it impossible to stay in schedule.

People in Group 1 mentioned mainly challenges that affected their own work in the project. This is obviously understandable, since there is no need for all people to know and worry about things that do not affect their tasks. However, one person mentioned that in a past project, information did not flow between different sub-teams and sometimes this was a problem because people were not aware of others' challenges, which caused extra work when people were struggling with the same problems and the solution must be found several times instead of centralized problem-solving.

Respondents in Groups 2&3 (project managers and top management) had a lot to say about challenges and responding to them. Schedule was among the challenges but it was not considered to be the biggest challenge. The perceived order of biggest problems varied among people, which only proves that there are differences between projects, but also between people and what they consider as being very challenging.

One person stated that in many projects the biggest obstacle is not inside the project itself, but rather comes from the overall planning of ICT projects. As mentioned earlier, the company lacks a clear roadmap for ICT-development. This means that many of new projects come by surprise and too little time is left for planning. The interviewee felt that the top-management of the organization wants to start the projects as quick as possible and give a very tight schedule. The person also mentioned that there is not a good system for gathering data from past projects, which means that projects struggle

with the same problems time after time, due to the lack of “lessons learned” –type of a database.

Another person said that the biggest problem is the lack of internal human resources. The person felt that there were not enough people assigned for the project team and this combined with a tight schedule lead to long workdays. The person also felt that the internal ICT-support was not available enough to help with the technical side of the project.

One project manager stated that sometimes it is a problem that although the project manager is dedicated and enthusiastic about the project, it is hard to get the project team excited about the work. According to the respondent this is often due to the fact that people in the project team must work for the project in addition to their daily work.

Some of the interviewees emphasized the meaning of traditional project management. They stated that in a large project such as the ERP-installation, it is crucial that the project manager can handle the three basic components of a project: scope, budget and schedule. The people explained that a large project has so many individual tasks that it takes a lot of experience to handle them so that the three components stay untouched. One of the people also noted that this becomes even more difficult when the schedule is tight and the project is in a hurry.

All of the respondents in Groups 2&3 told that resistance to change is always a challenge in an ICT project, as it according to them is in any project. This shows in different forms; everything from loud resistance to becoming extremely passive. When asked about possible ways of decreasing the resistance, all agreed that communication is the first priority. It was stated that internal marketing is very important and it must be started very early in the project, sometimes even before the actual project starts. This is because people must understand what is changing and why. According to one of the

interviewees, communication is a crucial element of change, meaning that change is not possible without proper communication. As one of the respondents put it:

The more a person is aware of things and feels to be able to influence things, the less the person resists.

However, there were also bad examples of communication as a means of decreasing change resistance and ambiguity. One interviewee gave an example from the past, explaining that a new system was in testing phase and it seemed that the system was a bit slower than the old one. The person described the situation:

We were sitting in the meeting and told that the system is slow from time to time and there seems to be some performance challenges. The response from one senior manager was: "Shut up, it's fast". This sort of communication didn't really solve the situation...

Although a lot of formal communication has been used in many of the projects during past years, practically all of the interviewees agreed that the formal communication is not enough. One interviewee stated:

Formal communication is not enough, people need to be personally engaged to the project. Repetition is a good tool; a person might refuse to listen at first but as you repeat the message often enough, the message starts to sink in.

All respondents in Groups 2&3 explained that communication should consist of both formal and informal communication. One interviewee noted that different groups need different communication. This is because different groups face or create different challenges and to tackle these issues, targeted communication is needed. The person

also pointed out that in addition to the rest of the organization, also the top-management needs to stay informed about the phases and progress of the project. Another person noted that formal and in the interviewee's words, "Stasi-type", -communication is not enough. What the person meant was that if formal information keeps on telling that everything is going smoothly and all indicators are showing a green light, but people are starting to hear rumors about difficulties, the formal communication loses its credibility. The respondent stated that communication should be open and honest to maintain the trust of the organization.

Another person explained that it is very important to engage people to the communication on a personal level. The respondent told that the people in the project team have an extremely important role in the communication, because they are the ones who have credibility among their colleagues. Their role in the communication is also very important because they can translate the formal message to a language that everyone understands. The person noted that in many cases the formal communication is full of strange terms and therefore the message is hard to understand. It was also noted that in many cases a lot of information is put to a company intranet but someone has to first explain the text and the meaning of it to people outside the project, before the text actually starts working.

All people in Groups 2&3 also pinpointed the meaning of trainings in battling the challenge of change resistance and creating positive sides to the forthcoming change. Whenever a new system is implemented, the future users must be trained to use it. As the respondents explained, training is a very important tool for decreasing resistance to change and it also serves as a very efficient instrument for internal communication. One of the interviewees explained the meaning of training the end users as follows:

People don't understand what the forthcoming change means until they are forced to use the system. It isn't until the

trainings when the “truth is revealed” and the whole matter becomes personal.

4.6 Importance of top-management support

All interviewees agreed that top-management support is important for overall project success. However, there were differences on how people perceive top-management support and why it is important. The people with experience of working in the project team (Group 1) perceived top-management support important, but did not provide specific reasons for it. People in this group generally thought that top-management should be more present among the project team to create a feeling that they are interested in the progress of the project. One person also noted that top-management must bear the responsibility for the project to maintain trust among the project team.

Groups 2&3 viewed top-management support critical for project success. Top management support was considered to be critical according to all project managers, no matter whether they had experience on large or smaller projects. The project managers all stated very clearly that a project has practically no chances of success without it. One respondent explained that top-management must understand the needs of the project and support the project manager. The person also noted that top-management should communicate to people in the project that everyone is needed and everyone should commit themselves to the project according to the needs of the project. One interviewee described top-management support as follows:

It is very important. Well-working top-management support was one of the main reasons why my last project could be taken through in schedule. It is crucial that the top-management understands the importance of the project and helps when needed.

Another interviewee pointed out that in addition to the support that a project's top-management should provide, also top-management of the entire organization should support ICT-initiatives. The person mainly meant that top-management of the organization must understand that ICT is not a one-time investment, but it needs constant development to stay on the level that is needed to run daily business smoothly. The person further added:

In this company this is not an issue. The top-management of the organization has well understood that development is needed and we have very well functioning relations to the management. They have taken ICT as one strategic success factor, since they know that without ICT, overall business development would not be possible.

It was explained by one of the respondents that in order to ensure top-management support, communication between the project manager and the top-management must be maintained open and honest. The person added that the top-management is not interested in small problems faced in the daily life of the project, but rather in larger matters, such as the overall schedule and budget of the project. The respondent further elaborated that in order for this to be possible, the top-management must give a certain degree of power to the project manager for it to be possible for him/her to make the daily decisions.

4.7 Role of the external service provider

All of the respondents were or had been working in an ICT project that involved an external service provider. Questions about the role of the external operator as well as the relationship between the project managers in the company and in the external provider were asked. The company uses different vendors for different projects but on the other

hand, a single vendor can be working for multiple projects with the company at the same time. The relationship between the company and a vendor can be established for only one short project, but often the relationship lasts longer especially if a large project includes sub-projects or is conducted in all operating countries during several years. It can be seen in the interviews that in a longer relationship, the history with the vendor has an effect that can be both positive and negative.

The interviewees in Group 1 had different experiences of working with an external service provider. Some of them had no experience whatsoever and others had been in close contact with external companies. One respondent said that he has no experience of such co-operation and the person found this a good thing since this removes one stress factor in a project. Another respondent had been in close contact with an external service provider, since it has been unavoidable in the project the person is working on. The interviewee found it very important that the external consultants are visible in the company premises, since this creates trust that all parties in the project are pulling their weight. The person also told that it is very positive that the external consultants are available for questions and that answers are also provided fast.

All respondents in Groups 2&3 had experience in working together with an external service provider. The experiences were quite different depending on the person and project. Some people found it pleasant and necessary to co-operate, whereas others had experienced some serious problems in the co-operation. People with the positive experiences stated that working with an external vendor is practically always needed and by managing the relationship well, the co-operation can be pleasant. The negative experiences seemed to come out of issues based on disagreements on scope, schedule and budget and due to the disagreements, the co-operation had become quite unpleasant in general.

The interviewees all agreed that the project manager as well as the service provider's project manager should work together to achieve the goals of a project. It was stated

that a project should always have only one manager – meaning the project manager in the customer organization – and the service provider’s project manager should control the work in his/her company and help the actual project manager. One respondent also pointed out that managing a project is all about communication and therefore the two project manager need to come along very well. The person explained:

It even goes as far as personal chemistries. Even though the two people would be very competent but their personalities don't match, one of them must be changed. The situation will otherwise most probably result in collisions and the communication between them will disappear. After this neither will do any more than they have to.

Many of the interviewees told that sometimes co-operation becomes quite difficult because of disagreements. One person stated that in many cases it feels as if this is due to a non-stated business-model in the service provider’s mindset, meaning that they usually promise a lot of things during the initial bidding phase but once the project is started, they will only do a minimum amount of work and everything else must be paid separately. The person explained it as follows:

This shouldn't be an issue once the initial planning and specifications are done. However, it seems that the name of the game in this industry is that they will only do the minimum and charge extra for everything else.

The respondents felt that if such a situation occurs, in which the project managers disagree about the three basic components of a project – budget, scope, schedule – top-management support becomes crucial. This is because the project managers should maintain good co-operation at all times. However, if an issue cannot be solved, the situation quite easily escalates and after that nothing will go smoothly during the rest of

the project. The interviewees felt that the only solution for situations like these is to take the disagreement to the top-management teams of both parties for them to solve it. One respondent explained the situation by saying:

In many cases, problems are due to insufficient planning of the scope and therefore it is not clear to neither of the parties what is wanted. However, whatever the reason is behind the disagreement, the issue must be taken to the steering group and they will then give guidelines of how to proceed.

By doing this, the project managers do not have to argue by themselves, but can rather continue working on the project together while the top-management teams solve the situation. Once the solution is found, the project managers should accept it and move forward in the project.

4.8 Discussion

An extensive amount of data was received from the interviews. As in most cases, people have different opinions about various practical issues and about the importance of different aspects. However, there were some matters that were brought up by every single interviewee and by using these insights, a new perspective on project management was formed.

As the literature review states, change management is very important for ICT project success. This is recognized by many researchers and has been widely studied (see for example Goodman 2006, Kemp & Low 2008). However, it seems that none of these authors provides a widely applicable single model that would simplify the concept of project management to a framework that could be applied in practice.

In the research problem and gap –section of this thesis, it was stated that one purpose of the empirical part is to observe what kind of change management processes exist in the case company. After reviewing the interview data, it seems that no clearly defined change management processes actually do exist in the company. This does not mean that change management is not used, it merely means that it is not a concept that would be widely in use and people do not necessarily acknowledge that some of their actions are in fact change management. However, it must be noted that some of the interviewees were very well aware of the concept and used it in their work.

When studying the data from the interviews, two matters rose above others in their perceived importance for ICT project success. First: communication, second: a project manager with adequate experience. All interviewees also agreed that top-management support is crucial for project success.

By combining these three factors, a framework for project management is created. The framework is based on the basics of change management and the empirical data. The purpose is to provide a simplified model of project management, derived from real-life experience from the interviews. The model shows the basic preconditions that make it possible for an ICT project to be successful. In the following paragraphs, the model is explained.

Figure 2. Project management framework

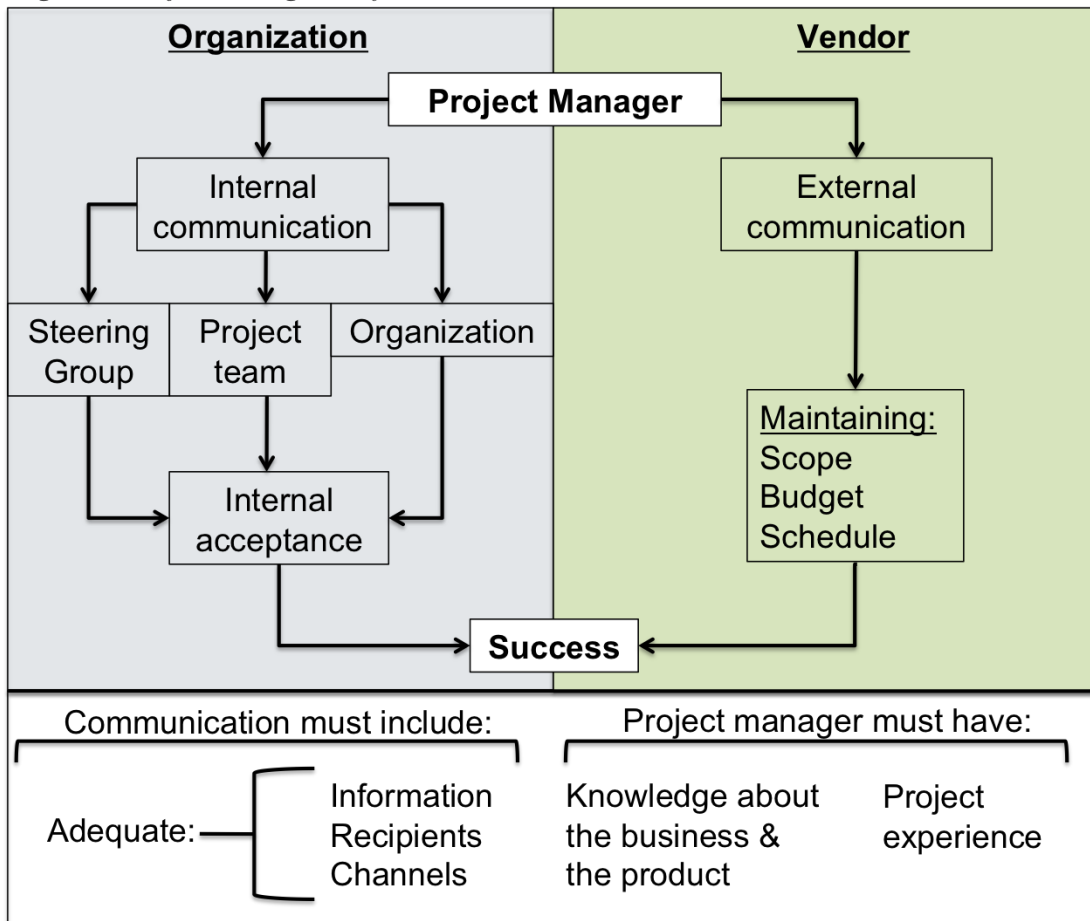


Figure 2 provides a basic framework for ICT –project management. In this model, the importance of communication is emphasized and additional preconditions for success are added to the picture. The basic structure of the model is first explained and after that, more practical examples are given to further elaborate the thinking behind the model.

The framework is divided to two different sides of needed communication; internal (client) and external (vendor) and it is viewed from the perspective of a project manager. As shown on the internal side, communication needs to flow to the steering group of the project, to the project team, as well as to the whole organization. On the external side of the framework, communication flows to the external partner to ensure

that the project stays in scope, budget and schedule. As shown in the lower part of the picture, communication needs to be built out of adequate information to the right people through right channels. The project manager also needs to have project experience as well as knowledge about the business and the ICT-product at hand to be able to manage the whole picture.

4.8.1 Internal communication

During the interviews, many views were given on the internal communication of projects. All recipients agreed that this is a crucial part for the overall success of a project. However, the given answers differed between people, which was mainly due to their different experiences on projects and project management. Differences could be mainly found from their opinions on which channels should be used, how formal the communication should be and from whom the information should come from.

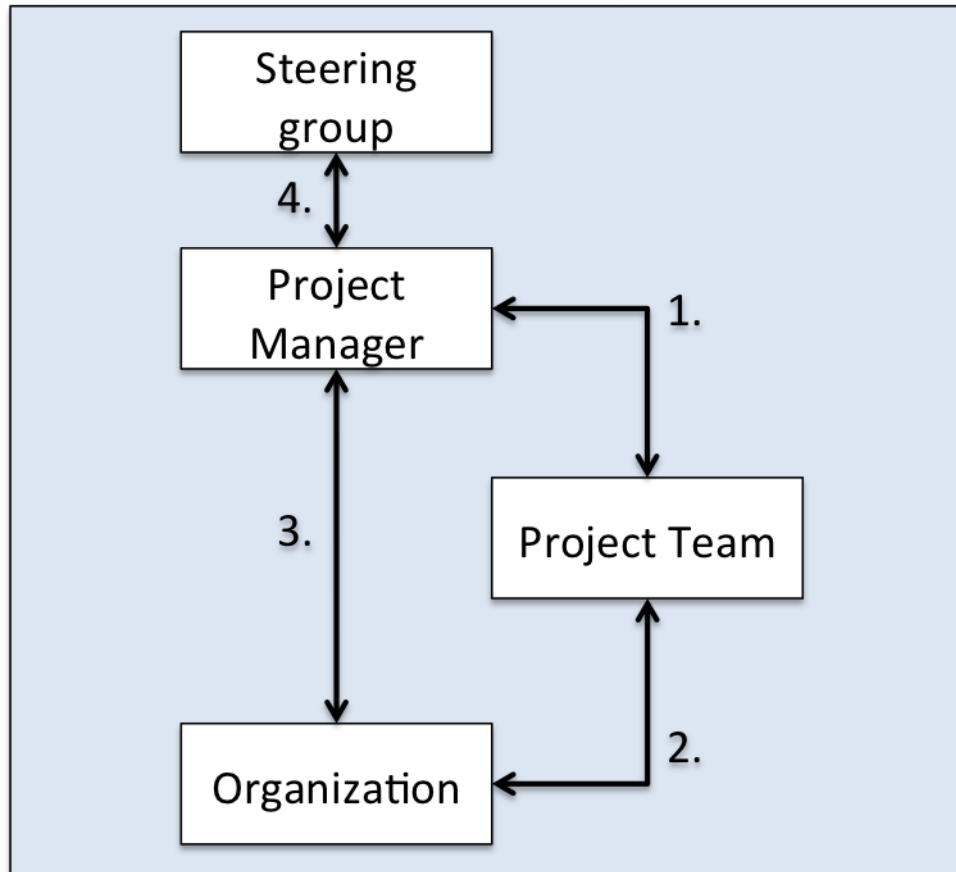
Many of the interviewees viewed communication as a means to tackle challenges and decrease resistance to change. This was particularly the case with all of the recipients who had project management experience. These people felt that communication is the key to success but it is a difficult part of any project due to the changing conditions and characteristics between projects. This means that communication must always be suited for the project at hand and therefore it can be copied from previous projects to only certain extent.

After reviewing all the data, it could be seen that according to the interviewees, communication must include adequate information to the right people, through right channels. As one recipient noted, a “Stasi-type” communication does not work, but rather communication must be open and also unpleasant issues should be discussed. However, this does not mean that problems should be written to the front page of the company intranet, but they should be discussed with the right people, for example

together with the project team and some people outside the project that are possibly affected by the issue. Having said that, it must also be noted that according to the interviewees, there are also issues that should not be discussed in public to avoid unnecessary worry and ambiguity. This is because although communication should be open and honest, it must also be a means to decrease change resistance instead of creating it.

Figure 3 (see following page) shows the internal flow of communication. The figure shows that communication must originate from the project manager, forwarded then to the project team. However, the organization receives information both from the project manager, as well as from the project team. It is also important to note that the flow of information is not this simple in real life, since communication almost always includes information flow to both directions as indicated also in the picture. The interviewees described that the information between the different parties in the figure is always modified to suit the situation and the people. Communication towards the organization is a management tool, whereas communication to the steering group is more informative in nature. However, sometimes the project manager must discuss in more detail with the steering group to solve issues.

Figure 3. Internal communication flow in ICT-projects



Communication must also take many forms and information should flow through different channels. In addition to the formal communication that is brought to people via intranet, emails or other formal means, informal communication is also extremely important. Many of the recipients stated that informal communication could in many cases be even more needed than formal. This is because people do not necessarily even understand the formal information they receive. Particularly in ICT projects the vocabulary is sometimes hard to understand and therefore it is important that people in the organization receive a “translation” from their colleagues working in the project team. Once people understand what the project and the vocabulary mean, the formal information starts to mean something and has the intended effect. The informal

communication can take place in the office corridors, in the cafeteria, and in other everyday situations.

In addition to the actual communication, also the overall attitude of the project team members is important. As many of the interviewees noted, faith in the communication is lost if the people in the project act in a way that reveals that they do not believe in the project themselves. Many people are quite sensitive to notice from small things that everything is not as the formal message states. This again emphasizes the role of the project manager. He/she must first convince the project team that the project is doable and will result in something positive for the organization. Only then internal acceptance for the project can be achieved.

Communication to the steering group of the project is important for a number of reasons. First of all, the steering group usually demands regular information about the project. After all, they are the ones that provide the budget for the project and therefore want to know that the project is going to achieve the goal what it was initially started for. A second, perhaps a more important reason is that the communication and relationship between the project manager and steering group in general must be maintained good in case of possible problems. As the interviewees stated, the steering group should support a project manager at all times. This is important especially in problem situations that cannot be solved between the project managers. As stated earlier in the thesis, in these situations the problem must be taken to the steering group to ensure that project managers can continue working together.

When talking about the internal communication, the importance of trainings as a means of communication cannot be neglected. As presented already in the literature by Gotsill & Meryll (2007), communication and training should be combined. It also became clear from the empirical data that trainings are an important part of any ICT project. It was seen as a good tool for decreasing change resistance and communicating the meaning of the change in practice.

All in all, by combining the points of the interviewees, well-executed internal communication is the key to internal project acceptance. As stated before, the communication must be carried out with a mindset that acknowledges the differences in information demand among the different recipients.

4.8.2 External communication

In the external side of the communication, the information flows to the external service provider. The external part can also mean the ICT-department of the company itself, or whoever is doing the actual implementation work. In this thesis however, it is assumed that an external service provider is used, as it is the case in the case company.

The external communication usually flows only between the project managers. This is because the external partner often wants that the client company does not contact the people in their team, since the client's project manager cannot be aware of any other projects or schedules of the external partner. Therefore it is simpler to keep the communication strictly between the two project managers.

According to the interviewees, communication skills are perhaps the most important skills when working together with an external partner, but there are also some other capabilities that a project manager must have. First of all, the person must have experience on similar projects and preferably in project management. This is because a project is full of different tasks that must be kept in control to stay in the three basic components of a project: scope, budget and schedule. Second, a project manager should have knowledge about the business and the ICT-product.

In the interviews, people were asked whether the project manager should be a businessperson or someone from the ICT-department. A general opinion seemed to be that it doesn't matter what the project manager's position in the organization is, but

rather it is much more important that the person has a good overview of the whole company and its business. This was considered to be very important because if the project manager is not familiar with the company and its business, it makes it very hard to define what is needed from the new ICT-product or –solution. This obviously affects the initial planning phase and also makes it harder to ensure that the project is going to the right direction as it progresses.

According to the recipients, a project manager should also have some knowledge about the product that is implemented in the project. This is quite an obvious comment since one must always know the tool that is used for the work; otherwise the work cannot really be done. However, the interviewees agreed that this is not a necessary precondition when selecting the project manager. This is because the selected person can quite easily learn the basics of a new system in a matter of quite short time. The interviewees emphasized the meaning of general knowledge on the company and its business, as well as the project experience.

By combining the project experience and knowledge about the company and its business with good communication, a project manager is able to stay in the agreed scope, budget and schedule.

Some of the recipients also emphasized the meaning of these capabilities during the initial planning phase. This is because the three basic components of a project are defined in the planning phase and if they are not defined in a realistic way, the project is doomed to fail. Due to this, it is crucial that the project manager has the needed skills and knowledge so that he/she can discuss the right issues, knows what the organization needs and has some sort of a picture how the system works and what it can do and what it cannot. One person also stated that no matter how experienced a project manager is, the first step with the external service provider should always be a thorough discussion about the needs and the vocabulary of the product as well as the two organizations. This is important since if the organizations do not have a common language, they can

understand things in a very different way during the planning and this leads to problems in the implementation phase. As the person said:

A new system and its vocabulary is always totally new to people. It takes a while before consultants and people in the customer organization start to understand each other. To start straight from the actual planning is often the biggest mistake people make in projects. In the project X, the first six months of work was conducted according to a plan that was based on a series of misunderstandings.

By being able to make good plans and having the right knowledge combined with good communication, a project manager is able to stay in scope, budget and schedule. When this is combined with the internal acceptance achieved by good internal communication, an ICT project has possibilities for success.

The points risen by the interviewees seem to be well aligned with the literature about change management. However, the fact that many of the recipients have project management experience obviously affects the mindset that they have on project management and change management. It seems that the interviewees have a very practical view on project management and change management as a term is left with little attention. On the other hand, the importance of communication was emphasized by practically every interviewee and when looking at the literature, it becomes obvious that communication indeed is the core of change management.

4.8.3 Preconditions and Planning

To sum up the discussion, the preconditions for a successful project are presented in the picture below. In Figure 2, the basic model for running an ICT project successfully was

presented. In Figure 3, the flow of internal communication was explained. In Figure 4 below, the preconditions for an ICT project are gathered.

Figure 4. Preconditions for a successful ICT-project

Requirement	Adequate resources	Capable Project Manager	Steering Group
Criteria	<ul style="list-style-type: none"> • Adequate scope • Sufficient budget • Sensible schedule 	<ul style="list-style-type: none"> • Good communication skills • Knowledge about the business & the product 	<ul style="list-style-type: none"> • Top-management position • Commitment to the project
Benefit	<ul style="list-style-type: none"> • A solid basis for a project 	<ul style="list-style-type: none"> • Internal acceptance • Maintained scope, budget and schedule • Good vendor relationship 	<ul style="list-style-type: none"> • Support in problem situations • Final acceptance of the project

Figure 4 provides a list of preconditions for a successful ICT project. The table sums up the most important factors behind successful projects, according to the interview data. Change management as a term is left out from the picture. However, the underlying importance of change management cannot be neglected. As mentioned in the literature, the purpose of change management is to create an environment in which change can be implemented. The only viable tool for this is well-planned communication, which is presented in figure 4 as one of the key capabilities of a project manager.

The starting point of any project is the notion that a new system is needed. After that, the resources for the project are defined. However, the project manager is in a key position already in this point and the knowledge especially about the business is very important. Knowing the business enables the project manager to make plans that fit the need and are possible to execute. The steering group of the project is needed in the

beginning to grant the resources, during the project to solve the most problematic situation, and in the ending phase to give a final acceptance that the project has achieved its goals and can be ended.

5 Conclusions and Managerial Implications

The purpose of this chapter is to summarize all the key findings of this paper. In the managerial implications the intention is to explain the aspects of this research that are relevant to the business world. Related to this, an important part of the conclusions is also the suggestions for further research, since the practical side of ICT project management is still a problem for many companies and due to this is open for research.

5.1 Main Findings

In the beginning of this thesis, the preliminary assumption was that change management is needed in managing an ICT project. Another area of interest was the challenges that project managers face in managing a particular project. These matters were explored by going through an extensive amount of data from various sources. The literature supported the initial assumptions concerning the need for change management and the fact that challenges are faced in practically every ICT project.

By reviewing the existing literature, it become evident that ICT projects are indeed an area that has been studied extensively but still ICT projects have a very high failure rate. This was found to be the result of various challenges, but most scholars seem to agree that the most common reason for ICT project failure is the lack of adequate communication and change management. Also other reasons can be found but these two rise above others.

A large portion of the existing literature is quite theoretical and does not provide practical models for everyday life. The reasons behind failed projects are understood and change management is suggested to be the key to success. However, the field of

ICT project management consists of such a large variety of projects, products, people and organizations that practical models and suggestions are not easily found. Some scholars even avoid giving explicit models since they could only be applied to limited types of projects.

Although change management is widely seen as an effect tool for running ICT projects, it seems that people do not have a clear picture about what the concept means in practice. Therefore this study suggests that the concept must be simplified into a basic model that explains the preconditions for a project, gives a framework for managing a project and explains and simplifies the needed communication within projects.

It became very evident from the literature that communication is the key to success in ICT projects and the core of change management. It is a tool for implementing change within an organization and its systems and processes. Communication is also considered to be the most important tool when trying to decrease resistance to change. Resistance can be found in more or less all projects since projects in general aim for something new and it always includes some form of change. The interview data was well aligned with the literature. As suggested by practically all of the interviewees, communication is crucial for project success and needs to be planned to meet particular needs. As described earlier, communication must include adequate information, to adequate recipients, through adequate channels. As Milis & Mercken (2002) suggest, communication must be focused instead of broad-brush.

In addition to communication, it was found that without a competent project manager, a project does not have very good chances for success. The empirical data suggested that two most important competencies of a project manager are: project experience - preferably in managing ICT projects - and knowledge about both the business of the organization as well as the system to be implemented in the project. However, knowledge about the system is not a must for a project manager since that information can be rather easily acquired during the first steps of the project. Also the interviews

supported the overview given by literature. Project manager is the most important person within an ICT project and should therefore be chosen with care.

The third larger entity that has a large effect on any ICT project is the existence of a project steering group. The mere existence of the steering group is however not enough, but the steering group must support the project manager in all phases of the project if any problem situations should occur. The existence of the top management also seems to have a meaning for the people working in the project. Sometimes it is enough for the top management to be visible among the people to increase their motivation and trust towards the project.

By combining the three most important things in any ICT project – communication, a capable project manager and a well-functioning steering group – success is possible. However, it also became quite clear from both the empirical data as well as the literature that the whole picture is always different between projects since projects are different, people are different and organizations are different.

5.2 Managerial Implications

Due to the fact that the findings in this thesis are a set of combined and simplified theories, united with the empirical data, it can be assumed that the findings are rather well applicable to most ICT projects. Also due to the simplified view of the findings, it can be assumed that they form a solid starting point for ICT project management. However, it must be noted that because of the limitations mentioned in the beginning of this study, there may be some findings that are not applicable to all situations.

One clear outcome is that ICT projects should be carefully managed, right from the beginning of any project. A project needs managerial competencies both in the project

management level, as well as in the steering group level. It must be understood that both levels must be well thought and planned before the actual work with projects can start.

When choosing a project manager, the top-management of the project should keep in mind that the organizational hierarchy should not play a role in the process. A project manager should not be chosen according to position in the organization, but rather according to the skills, competencies and experience of a person.

When looking at the findings, it also seems that the steering group and top-management of a project should be somewhat visible to the project to create trust and faith, and at the same time the top-management should give a working peace especially to the project manager. This also includes a certain degree of power that the project manager must have to be able to make daily decisions effectively.

According to the empirical data, the planning of communication seems to differ between projects. In large projects communication is thoroughly planned and executed accordingly, whereas in smaller projects communication often seems to be executed without a proper plan. In many cases this is not a problem since it may be that no communication is actually needed towards the whole organization, but sometimes it may be that communication is left without attention due to more urgent issues within the project. Due to this, the management of a project should consider how communication is done, already in the beginning of a project. After all, communication is among the most important success factors and therefore it should be well planned.

In addition to the general planning of future projects, careful documentation is also important in order to gain a “lessons learned” –type of a database. A database like this enables an organization to see what are the most common stumbling blocks in projects and could help in planning and running future projects.

5.3 Suggestions for Further Research

The degree of failed ICT projects suggests that further research is needed. Although an extensive amount of research data already exists, perhaps a more practical approach is needed.

The communication –side of project management is one area of research that would need additional attention. Communication is also a very extensively researched area, but there still is a need to study if a certain set of rules could be formed about how to choose the right information for the right people, through the right channels.

The co-operation between the project manager and the external service provider's project manager seems to be an issue in many ICT projects. This could be an interesting area of research, since the relationship between these two people can either make the project blossom or run the project in total apathy. In relation to the co-operation, the whole business model of ICT vendors would be an interesting research topic.

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Appendices

Appendix A

Two sets of interview questions were used. One was used when interviewing the project managers and the top management of ICT projects, and another when interviewing the people who had experience in working in a project team.

Question for the project management and the top management:

- In which ICT projects have you worked during the past two years?
- What are the most important phases of an ICT project?
- How does the project communicate its goals, phases and process to the organization?
- What are the biggest challenges in managing an ICT project?
 - How can the challenges be overcome?
- What kinds of uncertainties affect ICT project management?
- Do ICT projects include change resistance?
 - How can change resistance be reduced?
- What are the criteria for choosing a project manager?
- What are the criteria for choosing a project team?
- How does the organization welcome new systems and solutions?
- Are original plans changed in projects?
 - What is needed to make a change in the plans?
- How does the project affect the organizations perception of the new product/system?
- How does the project handle possible criticism/feedback?
- How can the organization ask or comment about the project?
- How is the organization made familiar with a new system?
- Do other projects have an effect on the project you work for / worked for?
- What is the role of top management support?
- What is the role of the external service provider?
- How do you understand the term change management?

Questions for the people with experience in working in a project team:

- In which ICT projects have you worked during the past two years?
- What are the most important phases of an ICT project?
- How does the project communicate its goals, phases and process to the organization?
- What are the biggest challenges in ICT projects?
 - How can the challenges be overcome?
- What kinds of uncertainties affect ICT projects?
- Do ICT projects include change resistance?
 - How can change resistance be reduced?
- What are the criteria for choosing a project manager?
- What are the biggest strengths/weaknesses of your project manager?
- What are the criteria for choosing a project team?
- How does the organization welcome new systems and solutions?
- Are original plans changed in projects?
 - What is needed to make a change in the plans?
- How does the project affect the organizations perception of the new product/system?
- How does the project handle possible criticism/feedback?
- How can the organization ask or comment about the project?
- How is the organization made familiar with a new system?
- Do other projects have an effect on the project you work for / worked for?
- What is the role of top management support?
- What is the role of the external service provider?
- How do you understand the term change management?

Appendix B

Below is the list of the interviewees. In order to keep the anonymity of the people, only interview date, duration, position of the person in the project, and location in the organization are provided.

Date	Duration	Position in a project	Location in the company
4.6.2009	55:24	Project manager	Communications
4.6.2009	58:50	Project team member	Marketing
5.6.2009	56:38	Project team member	Logistics
9.6.2009	1:10:57	Project top management	Communications
9.6.2009	49:49	Project team member	Communications
10.6.2009	1:05:55	Project manager	ICT
10.6.2009	37:14	Project team member	Sourcing
10.6.2009	51:01	Project manager	Only project work
11.6.2009	54:29	Project top management	Logistics
15.6.2009	53:47	Project manager	ICT