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Change management success factors in ERP implementation

Master’s Thesis
Helsinki, April 6, 2010

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### ABSTRACT OF THE MASTER’S THESIS

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**Title:** Change management success factors in ERP implementation  
**Number of pages:** 102 + 8  
**Date:** April 6, 2010  
**Language:** English  
**Professorship:** Business and service processes in digital networks  
**Code:** T-124  
**Supervisor:** Professor Riitta Smeds, D.Sc. (Tech.)  
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**Abstract:**

ERP implementation project is a challenging endeavor to any organization. In addition to changing a core information system and related business processes, all the project stakeholders’ competence and commitment need to be brought to the right level, at the right time, to ensure a successful completion of the project and attainment of project goals.

Change management is one of the most frequently cited “critical success factors” in ERP implementation literature. Yet, the theoretical coverage regarding the actual contents of change management in this context is very limited.

Therefore, this constructive study sets to answer the following research question: how should organizational change be managed in an ERP implementation project? The answer is a prescriptive Framework, which is based on Hannus’ (2004) strategic change process model and Salminen’s (2000) 11 change management success factors.

The empirical case is the global ERP implementation project of Wärtsilä Oy. This full-scope SAP R/3 implementation was challenging, but successful. The project started in 2002 and ended in 2007. The six informants held key roles in the global project team, and the extended local rollout team in the Finnish pilot implementation project. They were interviewed in 2009. The insightful and realistic case study focuses on the pilot implementation project, covering mainly the implementation, go-live and support phases. Analysis and reflection on the global project in its entirety is also included.

The analysis of change management practices in the empirical case revealed three key findings, which improved change management success, but were missing in the Framework: 1) Stakeholder management lays the foundation for building change readiness effectively. 2) Systematic standardization and improvement of the selected approaches brings in efficiency and consistency. 3) The change management activities should be integrated with other project activities, so that individual change management competence can be turned into organizational change management capability.

The three key findings were appended to the Framework in the form of two new success factors: Effective stakeholder management and Change management orientation. These success factors are particularly relevant in the context of a global ERP implementation. The concepts of stakeholder management and change management maturity need to be developed further. The concepts should also be incorporated into the best practices and assessment tools ERP implementation literature.

**Keywords:** ERP, Enterprise Resource Planning, implementation project, change management, project management, change management capability, change resistance, change readiness, stakeholder management.
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1. INTRODUCTION

1.1. Introduction to the topic

Enterprise Resource Planning system (ERP) is a companywide information and management system, which integrates the implementing organization’s business processes, business information and transactional data into one comprehensive database (Davenport 1998; Bingi et al 1999).

The ERP implementation project is always of strategic importance, considering that the cost, the risks and also the economic and other benefits the project may yield are significant (Markus & Tanis 2000). The ERP system can be considered the organization’s most strategic computing platform (Hong & Kim 2002). The implementation decisions should always be aligned to the organization’s overall strategy (Davenport 1998).

The reasons for ERP implementation include for instance the following: need to replace old systems to accommodate business, or due to aging, gaining cost savings by making business processes more efficient and increasing level of automation, and standardizing data structures and business processes (Markus & Tanis 2000, 180).

Company mergers and integrations also always affect the ERP system and related business processes. At least some of the parties will be required to implement a new system or modify the existing one, and the related business processes.

The ERP license market has grown steadily throughout the last decade (AMR Research 2007). This development should be in direct proportion to the actual implementation projects.

The ERP implementation project has widespread implications for the entire organization. The job descriptions and tools change for many, and the integrated processes challenge functional silo-based working practices. There is general uncertainty regarding the success of the project and the future. The more efficient processes may cause pressure to make headcount reductions (Davenport 1998; Jiang et al 2000).

Virtually all members of the organization become stakeholders for the project (Galuppin & Caems 2007, 145). ERP implementation is by nature highly top-down. Ultimately there needs to be commitment to the implementation outcome on all levels of the organization.

The implementation process puts high demands on the organization. The actual change, the new processes and the systems, are carried out in a cutover type event called go-live. Some kind of recovery phase always occurs after the go-live, before the operations and system become stabilized again (Markus & Tanis 2000).

Change management is one of the most frequently cited success factors for ERP implementation (Finney & Corbett 2007). However, the ERP implementation literature usually offers very limited coverage for what change management actually entails in this context. For this reason there is a need for further research on the contents and success factors of change management in ERP implementation context. Particularly, from practitioners’ point of view, there is a need for a prescriptive framework that may guide the change management efforts in this context.
1.2. The purpose of this study

The purpose of this thesis is to answer the question how change should be managed in an Enterprise Resource Planning (ERP) implementation project. The answer offered for this question is a prescriptive framework that explains and prescribes how change should be managed in ERP implementation project’s context.

1.3. The structure & contents of this thesis

This thesis is organized in the following way.

1) Introduction. The purpose of the Introduction chapter is to describe the purposes and backgrounds of this study, and also the contents of this thesis.

2) The theoretical part. Theoretical part describes the most important concepts related to ERP implementation projects, and change management concepts that are applicable to this context.

3) Framework. The Framework chapter describes the proposal for a prescriptive model of change management for ERP implementation projects, and recaps the research questions.

4) Empirical part. This chapter describes the empirical case, case material, method of empirical inquiry and the findings from the case.

5) Discussion. The Discussion part considers these findings, reflects them against literature, and presents the improvements to the framework based on these findings. Quality of the study is evaluated, and areas for further research are suggested.

1.4. The theoretical starting point of the study

This study has a special relation to two earlier studies (Salminen 2000; Hirvonen 2004) and one book on best practices of strategic management (Hannus 2004). I have used Salminen and Hannus’ contributions as ingredients to the Framework, which I am presenting in this study. Hirvonen’s study is linked to this study by the empirical case. Hirvonen studied the success and progress of change management efforts in the same ERP implementation, at the time before Pilot go-live in the case company’s Finnish subsidiary. I have used this study as support material while writing this case study.

From ERP literature the staple works of Davenport (1998) and Markus & Tanis (2000) have been important sources, as they describe the system characteristics, implementation project characteristics and implications of the implementation in an excellent manner. Several other ERP implementation sources are cited in the Theoretical part of this study, in addition to other change management sources as well. At times these overlap, but very often they don’t.

I consider there to be two “generic” change reactions. Change reaction refers to attitudes and behaviors that either hinder (change resistance) or promote (change readiness) the realization of the change. This division seems simplistic, but is useful once the concepts are properly understood.

I consider change management to be that set of change project management practices, that take into account the stakeholder groups, their relationships and criticality to the project success. These practices seek to increase the change readiness of the stakeholder groups in a prioritized manner, at
the right time, and by the right manner of involvement.

The works of Galuppin & Caems (2007) and Turner (2008) have played a role in presenting change management and project concepts and in discussing the findings.

1.5. Methodology, case & research approach

This study follows the constructive research approach (Kasanen et al 1993). This approach is used for problem solving in management sciences. A normative framework is constructed from theory to address a relevant managerial problem, and then tested against the empirical case, to gain a better framework as the result.

This study is a single-case design (Yin 1994). The empirical case presented is the global ERP implementation project of Wärtsilä Oy. This challenging, but successful ERP implementation project took place between 2002 and 2007. The interview data was gathered and processed in Fall 2009 utilizing the theme interview method (Hirsjärvi & Hurme 1991). The six interviews represent the global project team, local rollout team from the pilot project, and functional organization. The data covers aspects of the global implementation and its objectives, as well as the local perspective to the change process.

1.6. Framework & research questions

The academic outcome of this study is a prescriptive model for change management in ERP implementation. A success factor model based on Salminen’s (2000) work is adapted to ERP implementation context both through a literature review and synthesis with Hannus (2004) model of strategic change process. This Framework is validated against the empirical case, by which the original success factors are further elaborated, and the need for two new ones is recognized.

The research questions are the following:

1. How should the organizational change be managed in an ERP implementation project?

The goal of this study is to answer this question by presenting a prescriptive model.

1. Is the Salminen-Hannus Framework presented a good approach for this purpose?

2. How could the Framework be improved to make it more prescriptive and adapted to ERP implementation project’s realities?
2. THEORETICAL PART

2.1. The ERP system

The ERP system can be described as a companywide information and management system, which integrates all aspects of business (Bingi et al 1999). According to Davenport (1998) integration of information and process flows is a fundamental feature of ERP systems. Fragmentation of information and practices is the basic problem enterprise systems were designed to solve. ERP system pushes a company towards full integration and centralized management models.

The ERP systems of today are most commonly packaged software sold by independent software vendors. They are modular. Usually the modules correspond to functional areas of the organization. As the modules are integrated, the business processes that cut across different functions also become integrated.

The core modules of SAP R/3, the market leading ERP system, are presented in Figure 1. They span across the basic functions of a modern organization. In the chartering phase of the implementation project the organization chooses which modules to implement.

![Core SAP R/3 components](wlaf2009.png)

Even though the ERP software is sold in a “package”, considerable assembly and configuration effort is required, to build the right installation for the implementing organization. System integrator consultants are used to bring in this expertise to the project. The consulting costs may range between 1 to 4 times the license costs (Burleson 2001; Bansal & Swedroe 2010).

In many cases, the enterprise system needs to be interfaced with “legacy” systems, or “bolt-on” applications that have more specialized functionality, which the enterprise system alone cannot
deliver (Markus & Tanis 2000). These interfaces and related business processes may extend beyond organizational boundaries (Bingi et al 1999). ERP systems may be customized to some extent, but customization is often advised against. System customizations pose a significant risk on the implementation project success (Parr & Shanks 2000; Finney & Corbett 2007), and threaten the return on investment by increased implementation and maintenance costs (Beatty & Williams 2006).

Figure 2 illustrates the integration of the system. ERP systems operate on a client/server architecture, which gives the end-users opportunity to enter and retrieve information to the system remotely, on a real-time basis (Bingi et al 1999). At the core of such a system is a single, comprehensive database, that collects data from and supplies data into these modular, integrated applications that support “virtually all of a company's business activities – across functions, across business units, across the world” (Davenport 1998).

This integration pushes a company towards generic business processes, often referred to as “best practices” by enterprise software vendors. In many cases the system will enable the company to operate more efficiently than it did before. Because of this push towards centralization and generic business processes, the business must often be modified to fit the system (Davenport 1998).

2.2. Costs, benefits and risks of an ERP implementation

The ERP implementation project is always of strategic importance, as the costs, benefits and risks are considerable.

A full scope ERP implementation project is one of the largest and most crosscutting change initiatives an organization may undertake. The project often takes several years, and costs vary, from half million USD to nine digit figures. The average cost may lie at a couple of million USD (Burleson 2001; AMR research as cited by Beatty & Williams 2006; PMP research as cited by
Aloini et al. 2007). The cost factor depends largely on the size of the organization, and the number of modules implemented. Of course the appropriateness of the ERP implementation project should not be appraised by its cost. It is the realization of the business case, i.e. return on investment that matters.

The business benefits of an ERP implementation can be compelling. A well-planned and managed ERP implementation can boost the organization’s performance significantly across business functions. Considerable savings can be created by making organization’s business processes more efficient and automated (Davenport 1998; Bingi et al. 1999; Sumner 2000; Al-Mashari & Al-Mudimigh 2003). Markus & Tanis (2000, 180) summarized the reasons for ERP adoption, which further describe the sources of the business benefits and ERP implementation may bring. The reasons include business growth, which the existing systems cannot support, standardization of data and processes, improving business process efficiency, and aging or unnecessarily costly legacy systems that need to be replaced. Further reasons are listed in Table 1.

<table>
<thead>
<tr>
<th>Small companies &amp; simple structures</th>
<th>Large companies &amp; complex structures</th>
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<tbody>
<tr>
<td><strong>Business reasons</strong></td>
<td></td>
</tr>
<tr>
<td>• Accommodate business growth</td>
<td>In addition to the reasons smaller companies have</td>
</tr>
<tr>
<td>• Improve informal and/or inefficient business processes</td>
<td>• Integrate IT support function</td>
</tr>
<tr>
<td>• Clean up data and information through standardization</td>
<td>• Standardize different numbering, naming, and coding schemes</td>
</tr>
<tr>
<td>• Reduce operating and administrative expenses</td>
<td>• Standardize procedures across different locations</td>
</tr>
<tr>
<td>• Reduce inventory costs</td>
<td>• Present a single face to the customer</td>
</tr>
<tr>
<td>• Eliminate delays and errors in customer order fulfillment</td>
<td>• Acquire worldwide “available to promise” capability</td>
</tr>
<tr>
<td><strong>Technical reasons</strong></td>
<td></td>
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<tr>
<td>• Integrate applications cross-functionally</td>
<td>In addition to the reasons smaller companies have</td>
</tr>
<tr>
<td>• Replace hard-to-maintain interfaces</td>
<td>• Consolidate multiple systems of the same type (e.g. national general ledger packages)</td>
</tr>
<tr>
<td>• Eliminate redundant data entries</td>
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<tr>
<td>• Improve IT architecture</td>
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<td>• Ease technology capacity constraints</td>
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<tr>
<td>• Decrease computer operating costs</td>
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</table>

Table 1 - Reasons for adopting an ERP system (adopted from Markus & Tanis 2000, 180)

The decision to implement an ERP system should be always considered in a wider strategic frame. Due to its integrative nature and best practice process approach it may not fit the situation and objectives of all organizations (Davenport 1998; Somers & Nelson 2003). Disrupting a large-scale change project may decrease the chances of success for the next change initiative in the organization (Nyman & Silén 1995). Also, after going live, the ERP implementation is practically irreversible. Implementing an ERP system without taking company’s business strategy and objectives into account is bound to fail (Davenport 1998).

2.3. Implementation project phases

The ERP implementation project has certain basic phases. These are illustrated in Figure 3, which
combines the ERP implementation project model from the adopting organization’s perspective, “ERP experience cycle” (Markus & Tanis 2000), with a system vendor’s project model (ASAP 2009). Both models are described in more detail below.

Figure 3 - ERP experience cycle combined with ASAP implementation model (synthesized from Markus & Tanis 2000, and ASAP 2009)

2.3.1. ERP experience cycle phases

According to Markus & Tanis (2000, 189) the overall ERP “experience cycle” phases are:
1. Project chartering
2. The implementation project (configure & rollout)
3. Shakedown
4. Onward and upward

In the chartering phase the decisions that lead to project approval and funding are made. Typical activities are developing the business case, defining the key performance indicators and process of measurement, software, partner and technical infrastructure selections, initial planning, communication and organizational changes if required (Markus & Tanis 2000, 191).

The project phase consists of the activities to get the system and processes up and running in one or more organizational units. Typical activities in this phase are detailed project planning, and ongoing project management, team composition and training, process development, execution of change management plan if there is one, system configuration, customization if required, integration to other applications, data clean up and conversion, testing, end user training, rollout and go live.
The shakedown phase is the period of time from “going live” until “normal operation” or “routine use” has been achieved. This is a period where the organization goes through a temporary drop in performance. In this phase typical activities are bug fixing, system performance tuning, problem resolution, process and procedure changes, retraining and adding resources to accommodate learning and stabilization needs (Markus & Tanis 2000, 193).

The onward and upward phase consists of routine operation and incremental improvements until an upgrade or another system is rolled out. This is the period where the business benefits are realized. Typical activities may include post-implementation investment audit, continuous business improvement, technology upgrades and additional user skill building (Markus & Tanis 2000, 194).

These project phases are highly dependent on each other. The outcome and events of each project phase affect directly the chances of success of the next phase. Poor output from one project phase will certainly cause problems in the next phase. The implementation project also involves parties from many different organizations, and cuts across the hierarchical structures of the adopting organization, which adds to the challenge (Markus & Tanis 2000).

2.3.2. Implementation project phases

According to ASAP (2009) implementation roadmap, the implementation project phases are:
1. Project preparation
2. Business blueprint
3. Realization
4. Final preparation
5. Go live and support

Project preparation is the planning stage for the project, where crucial strategic decisions about project goals, implementation scope, schedule, budget, implementation sequence need to be made, and the project organization and relevant committees established.

Business blueprint refers to documentation of the company’s requirements, and how the business processes and organizational structure are to be represented in the ERP system. Original project goals and objectives are refined, and overall project schedule revised.

Realization refers to configuring the requirements contained in the Business blueprint into the system. The configuration of the scope can be arranged to up to four cycles, starting with the major scope and reaching further levels of detail in later cycles. Integration testing and end user documentation are key activities in this phase.

Final preparation is the phase of completing the preparation work, the testing, end user training, system management and cut over activities. All open issues need to be resolved, and the prerequisites for the go live need to be fulfilled, before proceeding into the next phase.

Go live and support denotes the move from pre-production environment to the live system. The most important activities are setting up system support function, monitoring the system transactions, and optimizing overall system performance (ASAP 2009).
2.4. Organizational implications of the ERP implementation

The implementation of an integrated ERP solution is described to be an “organizational revolution”, rather than a merely technical exercise. “ERP implementation is about people, not processes or technology”. The organization goes through a major transformation, and the management of this change must be carefully planned and meticulously implemented (Bingi et al 1999).

I have identified the following domains of change caused by ERP implementation in the ERP implementation literature:
• Organizational structure and management systems
• Organizational culture
• Business processes and job design
• Skills, attitudes and behaviors required from different stakeholders

2.4.1. Changes on organizational and process level

Enterprise systems have direct impacts on a company's organization and culture. The enterprise system can be used to inject more discipline, by exerting more management control and imposing more-uniform processes on the organization. On the other hand, the system enables companies to break down hierarchical structures, and utilize real-time information to enable higher levels of creativity (Davenport 1998).

Because of the imposed business practices, the implementation process can involve considerable change in organizational structure, job design, work sequencing, training and so on. The general consensus is that business process change adds considerably to the expense and risk of the implementation of enterprise systems (Markus & Tanis 2000).

According to Umble et al (2003) the existing organizational structures and processes found in most companies are not compatible with the structure, tools and types of information provided by ERP systems. The required realignment typically impacts most functional areas and many social systems within the organization. The resulting changes may significantly affect organizational structures, policies, processes and employees. Accordingly, ERP implementations may trigger profound changes in corporate culture.

2.4.2. Changes on the individual level

ERP implementation brings changes on the individual level as well. The enterprise system implementation may bring about a substantial increase in the visibility of an individual's performance, leading to changes in the accountability and control regimes in the organization (Markus & Tanis 2000, 183).

For a successful ERP adoption employee's understanding of the system and buy-in is essential. People need to have a critical mass of knowledge to be able to solve problems in the framework of the new system (Umble et al 2003). The change brought by the system implementation must include change of skills and mindset as well, which spans yet another level of change impact on the individual employee.


2.4.3. Almost everyone is a stakeholder

![Sample stakeholder map for ERP implementation project](Galuppin & Caems 2007, 145)

Depending on the scope of the implementation, almost everyone in the organization is affected by the project in one way or another, as exemplified in Figure 4.

The tools and job descriptions change for many. The integrated processes challenge traditional functional thinking. The more efficient processes may lead to headcount reductions. There is general insecurity on the future and outcome of the project (Jiang et al 2000; Davenport 1998).

2.5. Change resistance in an ERP implementation

The change resistance or lack of change readiness manifests itself in various ways in an ERP implementation project.

Shang et al (2004) listed three types of resistance: non-destructive, proactively destructive and passively destructive. This categorization and the corresponding behaviors are listed in Table 2.

<table>
<thead>
<tr>
<th>Resistance type</th>
<th>Resistance behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-destructive:</strong></td>
<td>Request job transfer or withdrawal from the job</td>
</tr>
<tr>
<td>Eliminate contact with the system</td>
<td>Increased absenteeism or tardiness</td>
</tr>
<tr>
<td></td>
<td>Communicating negative feelings to coworkers</td>
</tr>
<tr>
<td><strong>Proactively destructive:</strong></td>
<td>Deliberately sabotage work process</td>
</tr>
<tr>
<td>Direct damage to the new system</td>
<td>Making careless mistakes</td>
</tr>
<tr>
<td>processes</td>
<td></td>
</tr>
<tr>
<td><strong>Passively destructive:</strong></td>
<td>Refuse to cooperate with other employees</td>
</tr>
<tr>
<td>Passively damage the new system</td>
<td>Accept inferior quality performance</td>
</tr>
<tr>
<td>processes</td>
<td>Dissonance with consultants</td>
</tr>
<tr>
<td></td>
<td>Waste time and make little effort to improve work-related knowledge and skills</td>
</tr>
<tr>
<td></td>
<td>Neglect work assignments</td>
</tr>
<tr>
<td></td>
<td>Accept inferior quality performance</td>
</tr>
<tr>
<td></td>
<td>Dissonance with consultants</td>
</tr>
</tbody>
</table>

Table 2 - Types of resistance and resistance behaviors in ERP implementation context (Shang et al 2004)

These change resistance behaviors (Shang et al 2004) can cause loss of performance if they are
widely spread, and may even affect the business case of the project. It is important to notice however, that these resistance behaviors are all related to the end users. There are also many other important stakeholders in the implementation project, whose resistance or lack of support may be equally damaging for project success.

Jiang et al (2000) found the following reasons to cause resistance in ERP implementation projects:

- Change in job content
- Loss of status
- Interpersonal relationships altered
- Loss of power
- Change in decision-making approach
- Uncertainty/unfamiliarity/misinformation
- Job insecurity

It is worth noting that the concept “change resistance” can mean different things to different people. This is why I define and discuss the change reactions with more precision in 2.8.

2.6. Change management - a critical success factor for ERP implementation

Change management is one of the most commonly cited “critical success factors” in ERP implementation literature (Finney & Corbett 2007). Figure 5 illustrates that the top ten of critical ERP implementation success factors does not include any technical issues. Change management, and Top management commitment and support, considered a change management success factor by Salminen (2000), top the list.

![Figure 5 - Most frequently cited ERP implementation success factors, listed by the success factor and number of citations (Finney & Corbett 2007)](image)

Umble et al (2003) list change management as one of the critical factors for a successful ERP implementation. According to them, people should be properly prepared for the imminent change with proper change management techniques. If this preparation of people is lacking, “denial, resistance, and chaos will be predictable consequences of the changes created by the implementation”.

According to a study by Somers and Nelson (2004), change management was observed to be the single most important factor contributing to project success, during the phases of system adoption and adaptation, and third most important in acceptance phase, out of a list of twenty success factors.
In addition to ERP implementation success factor literature, the importance of change management and organizational readiness has been noted also in ERP implementation case studies (Motwani et al 2002; Mandal & Gunasekaran 2003).

The sources that actually discuss the contents of change management in the ERP implementation context are very few. The following are the most relevant studies I could find: Aladwani (2001); Galuppin & Caems (2007); Esteves & Pastor (2005); Hawking et al (2005); Huq et al (2006). Out of these, I consider Galuppin & Caems (2007), Huq et al (2006) and Hawking et al (2005) to be the most useful sources for the practitioner. I have incorporated their findings in the elaborations made to the framework, and also in discussing the results of this study.

2.7. Stakeholder management

In contemporary change management theories the concept of stakeholder management is often left out, and covered by a broader and less specific concept of participation. However, the greater the size and complexity of the change project (e.g. in terms of modules, sites, project organization structure and size, number of end users), the more important effective stakeholder management becomes.

Stakeholder management is mentioned however in some ERP implementation studies. Markus & Tanis (2000) mention stakeholder management as a typical activity for project implementation phase, but do not define how it should be conducted. Boonstra (2006) on the other hand, presents a useful model for classifying different stakeholder groups, but ends the story there. For practical needs this is not enough. Several authors (Finney & Corbett 2007; Soja & Grazyna Paliwoda-Pekosz 2009) note the lack of considering multiple stakeholder perspectives in ERP implementation studies, which gives the idea that different stakeholder groups face different situations and challenges.

The notion that different stakeholder groups could be systematically mapped, prioritized and influenced does not arise clearly in most of the ERP implementation literature I have seen so far. I have found only one source in ERP implementation literature, where this matter is covered (Galuppin & Caems 2007).

Based on the understanding I have gained from this case and prior experience, I would recommend an approach that combines Turner (2008, 77-84) with Galuppin & Caems (2007, 144-148). They provide several frameworks and checklists for the activity. Their approach can be synthesized into the following subsections: Identify stakeholders, Analyze stakeholders, Develop stakeholder strategy, Execute plans & follow-up, Improve the approach & make improvements visible. I will shortly review these phases below.

2.7.1. Identify stakeholders

Every part that has some relationship to the ERP implementation project is a stakeholder. Identifying the stakeholders is relatively straightforward, but it is best done through discussing through different opinions and reaching consensus, to create a common view of the stakeholders for the team. This results in a commonly accepted stakeholder mapping. The mapping can be rough in the beginning, and be changed over time (Galuppin & Caems 2007, 144-145).

I would not consider an ERP implementation stakeholder mapping credible if it does not mention key users or middle management. Galuppin & Caems (2007, 145) gives a very complete example of
2.7.2. **Analyze stakeholders**

The aim of stakeholder mapping and analysis is to identify the project impact to the stakeholders, and how the stakeholders impact the project (Galuppin & Caems 2007, 144).

At least the following items should be analyzed for each stakeholder/stakeholder group: What is their impact in the organization? What is their impact for the implementation project (Galuppin & Caems 2007, 145-146)? Are they for or against the project? Do they know what the project is about (Turner 2008, 78)?

2.7.3. **Develop stakeholder strategy**

Stakeholder mapping and analysis will show what is the appropriate level and timing of involvement, and what is the necessary outcome. The organizational impact of a stakeholder corresponds to the priority for the communications and involvement, and the project impact corresponds to the importance of participation. Not all stakeholder groups can or should be involved at the same time (Galuppin & Caems 2007, 146). Turner (2008, 79) gives an example on stakeholder register, and corresponding strategies.

A successful implementation requires learning (change of attitudes or behavior) from all stakeholders. The needs of learning, performance and commitment should be analyzed for each stakeholder group (Galuppin & Caems 2007, 148-155). Learning takes time, and various individual reactions occur in the learning cycle (Galuppin & Caems 2007; Turner 2008, 72-76). The project team should not postpone contact with target groups until the last minute (Galuppin & Caems 2007, 70).

2.7.4. **Execute plans & follow-up; Improve the approach & make improvements**

This section comprises two phases that could also be considered separately.

The stakeholder management strategy needs to be planned and projected appropriately. The stakeholders need to be communicated to, involved and trained appropriately. A follow-up mechanism must be created and used. The stakeholder perceptions, learning, performance and commitment need to be monitored. Finally, the approach should be improved based on feedback and information (adapting from Galuppin & Caems 2007; Turner 2008).

The feedback from stakeholders needs to be heard, considered and applied into the project. This application of feedback should be made visible by adapting the project communications or even project design accordingly. The improvements need to be visible to the stakeholders to make the process credible (Turner 2008, 84-85).

Stakeholder management is the prerequisite for increasing different stakeholders knowledge, skills and motivation the right way, at the right time (derived from Galuppin & Caems 2007). Therefore it is an important tool for increasing change readiness, and helping people overcome change resistance.
2.8. Generic change reactions: resistance and readiness

Two generic change reactions can be identified: change resistance and change readiness.

It is noteworthy that change resistance and readiness are not opposite concepts, and should not be treated as such. These are more like processes, which eventually all the stakeholders will need to go through, in order for the implementation to be successful.

2.8.1. Change resistance

By change resistance I refer to those attitudes and behaviors that delay or complicate the realization of the change.

Change resistance has both emotional and rational components. Change requires the individual to adapt, and this causes cognitive and emotional burden on the individual (Galuppin & Caems 2007). The rational components derive from the parochial self-interest (Kotter & Schlesinger 1979).

Emotional and cognitive change reactions

The emotional and cognitive components of change reactions are often categorized as change resistance, because they actually delay the realization of the aspired future state, by causing a drop in performance. To some degree these phenomena cannot be avoided, as they are the necessary predecessors of learning and accepting the change. However, these phenomena may become severely aggravated if they are not taken into account and handled properly (Galuppin & Caems 2007; Ford et al 2008).

Any current change or even a looming future change has certain psychological effects on the individuals that comprise the organization. These emotional and cognitive effects contribute to the performance drop, before the state of aspired performance is reached.

First, there is the cognitive cost of learning. Learning something new causes cognitive stress, decreasing the performance of an individual temporarily (Galuppin & Caems 2007, 53-54).

Secondly, there is the emotional cost of change. All changes cause emotional stress, which decrease the performance of an individual temporarily. An extreme example of this is the Kübler-Ross denial of death cycle, that describes the emotional phases of growing into acceptance of an life-changing situation (Galuppin & Caems 2007, 53-54). Even though the prospect of an ERP implementation does not hit the end of the scale of life-changing situations, similar emotional reactions may still arise.

Additionally the go-live causes performance drop because of the workload often increases due to the inevitable process and system problems or user mistakes. The struggle with this situation may also appear as “change resistance”.

It is important to define and apply the concept of change resistance in a constructive way. Otherwise the concept itself can become a stumbling block for real understanding of the phenomenon. Change resistance is a systemic phenomenon that affects both superiors and subordinates (Dent & Goldberg 1999). In fact, change resistance affects all the stakeholders on some level. All of them will need to go through some learning, and preferably grow into acceptance of the project outcome.
Rational change resistance

The key reasons for rational change resistance lie in the assessment of the situation, whether it is accurate or not, availability and absorbance of information regarding the change, and the assessment of the benefits and costs of the change for self and the organization, and the perceived fairness of the change outcome for self, organization and peers (Kotter & Schlesinger 1979; Joshi 1991).

Some people also resist change, because they fear they will not be able to develop the new skills and behavior that will be required of them. People are often unable to adapt to the situation as quickly as their organizations require (Kotter & Schlesinger 1979). If the assessment of the situation or personal ability to change is inaccurate, the apparent resistance to change is actually lack of change readiness.

Effective leadership can sharply reduce the behavioral resistance to change (Lorenzi & Riley 2000), whereas a perception of power-coercive change strategy produces ambivalence towards the change (Szabla 2007). This shows that the style of leadership affects the attitudes and behaviors regarding the change.

2.8.2. Change readiness

Change readiness refers to the attitudes and behaviors that either expedite or facilitate the realization of the change.

Change readiness can be described as the employees’ beliefs with respect to the following factors: (a) personal capability of implementing the proposed change, (b) the appropriateness of proposed change for the organization, (c) the commitment of leaders to the proposed change, and (d) that the proposed change is beneficial to organizational members (Holt et al 2007).

This definition is almost the perfect counterpart for rational change resistance mentioned above. Holt et al (2007) seem to define change readiness as a predecessor of change acceptance. Without taking further stand to the proper relationships between these concepts, I argue that an ERP implementation project requires very practical change readiness from many stakeholders.

Therefore I would like to take Galuppin & Caems’ (2007, 70) “three ingredients of change management”, namely skills, knowledge and motivation, and define “practical change readiness” as their totality. All of them are needed for a stakeholder to improve the chances of a successful project, more specifically, to expedite or facilitate the realization of the business case.

It is this practical change readiness: skills, knowledge and motivation, that the change management activities should increase.

2.8.3. Temporary drop in organizational performance at the go-live

By now it should be clear, that no matter how well the project is managed, and how cooperative and fast learners the different stakeholders might be, there will be an inevitable drop in the organizational performance at the go-live. Due to the challenge of building change readiness (and alleviating change resistance), the way different stakeholders are handled in the change process, has tremendous influence on the realization of the business case.

The general expectation may be that the organization’s performance improves on a smooth,
ascending trajectory after the go-live. However, in reality, “things will get worse, before they get better” (Galuppin & Caems 2007, 53), as illustrated in Figure 6.

![Figure 6 - Drop in performance after go-live (Galuppin & Caems 2007, 54)](image)

The organizational performance after go-live (weighed against project costs) is the make-or-break point for the project’s business case, i.e. return on investment.

### 2.9. Goals of change management in an ERP implementation project

According to Palmer & Dunford (2008) there are several different approaches to change management. The selected change management approach should fit the change context (Hannus 2004, 219).

I propose the following two-part definition for change management in ERP implementation project’s context:

Change management is a collection of change project management methods, which take into account the project’s impact on different stakeholder groups, and the different stakeholder groups’ ability to influence the project success.

The goal of change management is to improve the realization of the business case by increasing the different stakeholder groups’ change readiness and commitment to the change, for instance by the means of change communications, participation, scope control and training.

Without change management the change resistance and lack of change readiness can wreck the business case. Sometimes the project even is interrupted before it is completed due to these internal, people reasons.
The ERP implementation project’s goal is always to improve the implementing organization’s performance. Of course this performance improvement may arise from various sources, as seen above. Figure 7 illustrates the organizational performance after go-live. It also shows, that the business case and potential of change management is in minimizing the drop in organizational performance, and expediting the recovery from the go-live and thereby the attainment of the desired performance levels.
3. FRAMEWORK

The goal of this study is to develop and present a prescriptive model for change management for ERP implementation projects. This chapter presents the Framework, as the proposal for such a model. The Framework is based on the work of Salminen (2000) and Hannus (2004).

3.1. The rationale for selecting Salminen’s change management success factor model as the starting point

Salminen’s (2000) model of change management success factors was chosen as the starting point for this prescriptive model (Framework).

Change may occur in many ways, and there is evidence for the context specificity of the selected change management approach (Hannus 2004: 219). Considering that I was not able to find a satisfactory and simple model for ERP change management, I wanted to choose a model that would be likely to offer a good match. Salminen’s model is specifically intended for change projects. It is also a general and understandable model. These factors together make it a good starting point for this framework.

3.1.1. Reasons for excluding other models

ERP implementation change is arguably almost an extreme example of planned, top-down change. Once the decisions of the chartering phase have been made and the business case is clear, there is little room available for negotiation regarding the scope and schedules, at least from the perspective of the vast majority of stakeholders.

Several models I reviewed while looking for the right starting point seem to be intended for change processes that contain elements of emergent change, or bottom-up change. These models treat the actual change management process as one of change navigation or scope creation (Nyman & Silén 1995).

Technology acceptance models (TAM) that derive from diffusion of innovation (DOI) literature reveal interesting aspects to the user experience and beliefs (e.g. Kwahk & Lee 2008), but are these models suitable for the context of mandated technology use? The concept of “usage intention” for instance may not be reliably measured, and loses its meaning if the employees do not have choice whether to use the system or not (Brown et al 2002). This is exactly the case in ERP system implementation.

I think every change management model should specify the optimal context of its application. Many change management models don’t do this, rendering them risky choices for those, who are not so experienced regarding different change processes (Pendlebury et al 1998; Molden & Symes 1999). Some sources present such a vast collection of perspectives and concepts that the only question left is where to start, and again, what is the right application for each method (Paton & McCalman 2000).

In the apparent absence of applicable and clearly cut change management models of ERP projects,
Salminen’s simple framework for planned change projects seemed to be the most suitable one.

3.2. The change management success factors by Salminen

Salminen’s change management success factors are listed in Figure 8. Salminen's intention was to develop a general success factor model for change projects.

Salminen’s model combines several valuable insights from the fields of organizational development, operational development and project management (Salminen 2000, 95). Traditional aspects of project management, such as planning and goal setting are taken into account, and combined with those of change management, such as need for change, management support and communication. The model is based on success factors that contribute to the change project’s success. It is worth noting that Salminen seems to include both the management of people and matters under the umbrella of change management, and thereby his definition differs somewhat from mine.

Salminen’s original definitions for the success factors are presented in the Table 3.

<table>
<thead>
<tr>
<th>SUCCESS FACTOR</th>
<th>SALMINEN’S ORIGINAL DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leadership</td>
<td>Behaviors and actions of the persons leading the change.</td>
</tr>
<tr>
<td>2. Management support</td>
<td>The role and actions of managers.</td>
</tr>
<tr>
<td>3. Need for change</td>
<td>Identifying and communicating the reasons for change.</td>
</tr>
<tr>
<td>4. Participation</td>
<td>Involving those affected by the changes in planning and implementation.</td>
</tr>
<tr>
<td>5. Defining roles</td>
<td>Defining roles and organization during the change process.</td>
</tr>
<tr>
<td>6. Planning</td>
<td>Planning the change process in terms of what is to be done by whom and when.</td>
</tr>
<tr>
<td>7. Goal setting</td>
<td>Defining a vision and goals for the change</td>
</tr>
<tr>
<td>8. Control</td>
<td>Monitoring and controlling the progress</td>
</tr>
<tr>
<td>9. Training</td>
<td>Training and educating the people.</td>
</tr>
<tr>
<td>10. Communication</td>
<td>Distributing information about the changes and gathering feedback</td>
</tr>
<tr>
<td>11. Motivation</td>
<td>Getting people motivated and committed to changes through active motivational efforts.</td>
</tr>
</tbody>
</table>

Table 3 - Salminen’s (2004) original definitions for the change management success factors

3.2.1. Validation and adaption of success factors to the ERP implementation context according to the literature

Considering the generality of these success factors, I regarded it necessary to validate and adapt them to the ERP implementation context, utilizing ERP implementation and change management
literature. This discussion for each success factor is presented below. The adapted success factors are summarized in Table 4.

3.2.2. Success factor #1 - LEADERSHIP

Definition of the success factor: The behavior and actions of the person or persons leading the change (Salminen 2000, 97).

Example of prime performance: “An active and enthusiastic leader, who believes in the importance of the change, shows the way and motivates others through his/her own behavior” (Salminen 2000).

Validation and adaption of the success factor to the ERP implementation context: A project “sponsor” or “champion” is often called for in ERP implementation literature as well. The expressed endorsement should start from someone in the highest ranks of management (Mendel 1999). A project champion, as a role, is particularly useful in the early stages and during implementation phase (Aloini et al 2007). In some cases the project champion role is critical for marketing the project throughout the organization (Al-Mudimigh 2007).

From business process development’s viewpoint Nyman & Silén (1995) suggest recruiting and training change coaches/champions across the organization, to promote, facilitate and motivate the change.

Practical manifestations: The leader/leaders of the change are committed to the change, active, enthusiastic, inspires others to believe in and act on the change through their behavior. Leadership can be extended to the functional organization by recruiting and training change coaches across the organization.

3.2.3. Success Factor #2 – MANAGEMENT SUPPORT

Definition of the success factor: The role and actions of managers who have authority over issues and resources critical for the project (Salminen 2000).

Example of prime performance: Top executive(s) believe in the importance of changes and communicate this belief through their behavior, champion the change project, ensure that all the necessary resources are allocated and actions taken (Salminen 2000).

Validation and adaption of the success factor to the ERP implementation context: ERP literature cites lack of top management commitment to be one of the reasons ERP implementations fail. The support of senior management is necessary for aligning project goals and objectives with strategic business objectives and attaining them. The top management should commit to the project, see the profound changes it brings, and participate actively in the implementation (Umble et al 2003; Sumner 2000).

One of the key barriers identified to change in ERP implementation is that not all management levels are engaged in the change (Hawkings et al 2005). People will believe in the change project only when they see concrete changes in behavior, actions and results. This change in thinking and behavioral patterns must begin from the top management, (Hannus 2004, 220) and extend to all levels of management (Nyman & Silén 1995).
Senior management should be committed to the system implementation and the new processes (Grover & Kettinger 2000; Salminen 2000), and engage actively in furthering the project and resolving conflicts. This means that the importance of the ERP implementation should be communicated in speech and behavior by managers at all levels.

**Practical manifestations of the success factor:** Top-level executives are committed to the change, and set example and endorse the project in their speaking and behavior. They make sure project goals are linked with strategy, participate actively in the implementation, resolve conflicts, and make sure that the project has sufficient resources.

### 3.2.4. Success Factor #3 – NEED FOR CHANGE

**Definition of the success factor:** Identifying and communicating the reasons for the change (Salminen 2000).

**Example of prime performance:** Problems or opportunities requiring the changes are demonstrated clearly through analysis and practical examples and a shared feeling of necessity of changes is created (Salminen 2000).

**Validation and adaption of the success factor to the ERP implementation context:** A well-communicated shared understanding of the need for change was found to be one of the topmost success factors in ERP implementation context in Australian practitioners’ view (Hawking et al 2005: 192). In one case company the employees did not understand the need for the implementation, and they were confused and scared of the revolutionary changes. In another case company the need for change (and successful change management in other ways as well) was well established, and employees were willing to allocate a large amount of their time to the project. (Motwani et al 2002) ERP benefits should be communicated to the organization (Aladwani 2001: 269).

From business process development and change management side various authors note that it is crucial to communicate carefully the rationale for the change to the whole organization, to create a shared understanding on why there is an urgent need for the change project. (Grover & Kettinger 2000; Hannus 2004, 221; Holt et al 2007) This communication should be timely, and include the content of the change, together with what will not change, (Nyman & Silén 1995) and use every channel available (Kotter 1995).

**Practical manifestations:** Communicating the rationale for the change in a clear, timely manner, as to everyone affected by the change (if not to the whole organization), using every channel available, to create a shared understanding on the urgency of the change.

### 3.2.5. Success Factor #4 – PARTICIPATION

**Definition of the success factor:** Involving those affected by the changes in planning and implementation.

**Example of prime performance:** People on all levels and in all parts of the organization have an opportunity to actually affect the solutions implemented.

There should be direct or representational participation of all stakeholder groups in planning the implementation. Participants should have real decision power, without overriding the business
benefits of the project (Salminen 2000). Kotter and Schlesinger (1979) point out that people who participate will be “committed to implementing change, and any relevant information they have should be integrated into the change plan”.

Validation and adaption of the success factor to the ERP implementation context:
Combining discussion from ERP implementation literature and business process development literature, the following can be stated: Participation should be preceded with appropriate formal training for workshop participants, to enable effective contribution (Grover & Kettinger 2000; Bingi et al 1999; Holland et al 1999). Participation that happens too late increases change resistance. Participation of the wrong people at the wrong time directs focus into irrelevant matters (Nyman & Silén 1995). Poorly managed participation may have negative motivational effects (Salminen 2000).

Practical manifestations: All people affected by the change have an opportunity to affect the solutions being implemented. The participation can be either direct or representational. The participation should be planned, in terms of timing, content and participants for each session. The participants should receive training to be able to contribute effectively in the workshops. Relevant information from the participation should be incorporated into the change plan.

3.2.6. Success Factor #5 – DEFINING ROLES

Definition of the success factor: Defining roles and organization during the change process (Salminen 2000).

Example of prime performance: Responsibilities and authorities in the change process are clearly defined, the change project organization facilitates participation and effective control, and everyone knows what his/her role is during the change (Salminen 2000).

Validation and adaption of the success factor to the ERP implementation context:
In ERP implementation project context the success factor of Defining roles applies to the actual project organization and to the functional organization that will use the new system and operate the new processes.

The roles of the project organization need to be defined in the beginning of the implementation project, and again at the beginning of each sub-project. Barczak et al (2006) stated that "clearly defined roles and responsibilities enable individual team members to know what their particular tasks are … and hold each accountable for those activities".

Business process redesign, reengineering and development affect the activities and roles of those involved in the process provision. The roles required for the new business processes need to be defined to ensure effective performance of the process.

An organization that is undergoing changes may be particularly vulnerable to employee turnover. Role definition is linked to improving employee retention (Verlander & Evans 2007), which certainly contributes to the performance of any project team or organization.

Practical manifestations: The roles, responsibilities and authorities are clearly defined and communicated during the change process.
3.2.7. Success Factor #6 – PLANNING

**Definition of the success factor:** Planning the change process in terms of what is to be done by whom and when (Salminen 2000).

**Example of prime performance:** The change is planned as a project with a well-detailed work breakdown structure, resource allocation, schedule and budget, but the design of the actual solutions is to some extent left for the participatory development process and the plans are modified as needed (Salminen 2000).

**Validation and adaption of the success factor to ERP implementation context:**
According to Umble et al (2003) one typical reason for ERP implementation failure is poor project management. The organization may underestimate the scope, size and complexity of the project. Achievable schedules are not developed, and the expectations are not communicated. Planning is the backbone of project management, and a backbone of change management as well.

The planning of change management must begin with recognizing the need to manage change. The change initiators should anticipate and plan for the organizational resistance to change, and consider the politics of the change effort (Grover & Kettinger 2000). A typical reason for a raise of political behavior is a change in power bases, especially if those are valued and in short supply (Tanis 1983). This process may include a current state analysis (Markus & Tanis 2000). The change history of the organization should be taken into account, and if possible, presenting the current change as a continuation to the previous changes that have taken place (Nyman & Silén 1995).

**Practical manifestations:** A plan for the change project is created, which includes the schedule, budget, work breakdown, resource allocations, and leaves some flexibility for the actual implementation process. The plan is realistic and schedules are achievable, and the expectations are communicated. The need to manage change is recognized, and the change resistance and potential for political behavior is anticipated and planned for.

3.2.8. Success Factor #7 – GOAL SETTING

**Definition of the success factor:** Defining a vision and goals for the change (Salminen 2000).

**Example of prime performance:** The change effort has a clear and shared overall vision of the future state to be accomplished, as well as measurable performance goals (Salminen 2000).

**Validation and adaption of the success factor to the ERP implementation context:**
ERP implementation should be motivated by a clear business case that includes a vision of how the organization should operate after the implementation (Holland & Light 1999). According to Umble et al (2003), the strategic goals of the ERP project should be clearly defined. The organization should think through the goals, expectations and the deliverables of the project. According to Kotter (1995) the change vision should be compelling, easy and quick to communicate and illustrate. The function of the vision is to clarify the direction in which the organization needs to move.

Markus and Tanis (2000) take a very practical stand in their recommendation of defining the key performance indicators and process of measurement, according to the business case, in the early stages of the project. These definitions should include the ownership of the measurement process, and different success criteria and performance expectations for go-live and stabilized status.
Practical manifestations: There is a sensible business case and a vision of how the organization should operate after the implementation. The strategic goals and deliverables of the project are clearly defined. A vision, that is compelling and easy to grasp, is created, to clarify the direction of the change.

3.2.9. Success Factor #8 – CONTROL

Definition of the success factor: Monitoring and controlling the progress (Salminen 2000).

Example of prime performance: The execution of the plans is systematically monitored and performance of those implementing the changes coordinated and controlled to ensure effective and efficient implementations of the changes (Salminen 2000).

Validation and adaption of the success factor to the ERP implementation context: Markus and Tanis (2000) note that it is not enough to identify goals and benefits, they need to be tracked too. The organization-system performance should be monitored according to the key measurements, specified for each phase of project life cycle. The same authors also suggest conducting a post-implementation investment audit, to verify the results of the project and return on investment. Effectively in the context of this success factor, this means that the control should not end at the go-live point. Change project should be controlled and change progress should be reviewed regularly (Huq et al 2006).

The goals and plans should be kept alive, and be used as a basis of control, and modified when needed. There should be systematic monitoring, control and reporting practices of the project progress (Salminen 2000).

Potential changes in the project scope should be evaluated against the business benefits, and as far as possible, be implemented at a later phase (Sumner 2000). In ERP literature this is guideline is often parallel to the minimum customization philosophy, which to many researchers is a success factor as well.

Practical manifestations: The execution of plans is monitored and the performance of the project team is controlled in a systematic manner. The organization-system performance is also monitored according to the project-phase specific performance metrics. This means that the controlling aspect goes beyond go-live date, to establish the changes. Any potential changes to the scope are evaluated against the business benefits of the implementation.

3.2.10. Success Factor #9 – TRAINING

Definition of the success factor: Training and educating the people (Salminen 2000).

Example of prime performance: All people receive sufficient training in both implementing the changes and the new operating procedures to be implemented; the training is practical and timely (Salminen 2000).

Validation and adaption of the success factor to the ERP implementation context: Training is particularly important in a change project that requires adaptation to new business processes or systems. It is no wonder then, that in the ERP research training as a critical success factor is a more than common occurrence.
According to Umble et al (2003) the training should target not only end-users, but also the IT workforce, who is involved in the implementation team and/or has responsibilities of system maintenance and end-user support. Specific attention should be paid to internalizing knowledge and skills from the consultants. In their case study of four companies, all experienced higher training costs than expected.

The training should include using the new system, the new processes, and understanding the interdependencies and integration embedded in the solution. The employee needs to understand how one's work affects the work of others (Bhatti et al 2005; Grover & Kettinger 2000; Bingi et al 1999). Inadequately trained users will not be able to satisfactorily run the system. Lacking training and education is one of the key reasons why ERP implementations fail (Sumner 2000).

According to Markus & Tanis (2000), executive and end-user training should take place before the rollout. The training cost should be factored into the implementation budget (Markus & Tanis 2000), and sufficient time for learning should be allowed (Grover & Kettinger 2000). Additional skill building may be done after go-live (Markus & Tanis 2000).

**Practical manifestations:** Training is provided to both end-users, executives and IT workforce alike. The users need to understand the new processes, system use, and how their actions affect other processes and other parts of the organization. There should be enough time reserved for gaining these skills and knowledge.

3.2.11. Success Factor #10 – COMMUNICATION

**Definition of the success factor:** Distributing information about the changes and gathering feedback from the people (Salminen 2000).

**Example of prime performance:** All issues related to the changes are communicated through multiple channels to everyone in the organization throughout the change effort, discussion is open and free and information flows in all directions of the organization (Salminen 2000).

**Validation and adaptation of the success factor to the ERP implementation context:** Communication, as a critical factor for a successful ERP implementation, is the formal promotion and advertisement of the project's progress from the project management team to the rest of the organization (Holland & Light 1999). The employees' concerns should be addressed through regular communication (Rosario 2000).

Communication is highlighted in change management literature as well. The executives should use all existing communication channels to broadcast the vision, to as great an extent as possible. They should be the embodiment of the vision in their hour-to-hour activities, speaking, behavior and actions (Kotter 1995). Communication should also be a two way process. Feedback and input should be acquired from users, including their requirements, comments, reactions and approval of the solution (Rosario 2000).

**Practical manifestations:** Multiple channels are used with sufficient volume to communicate the change vision, project progress, clarifications to relieve concerns and any other change project issues. This communication reaches everyone in the organization and is continued throughout the change effort. Open and free discussion is enabled, and feedback and reactions systematically acquired.
3.2.12. Success Factor #11 – MOTIVATION

Definition of the success factor: Getting people motivated and committed to changes through active motivational efforts (Salminen 2000).

Example of prime performance: Those in charge of the changes ensure the commitment of people through making the goals desirable and the process credible and actively promoting the importance of the changes in all possible occasions (Salminen 2000).

There is considerable overlap with this success factor and many of the previous ones. I would like to extend this success factor with elements of how to deal with resistance, create readiness and encourage change by making structural adjustments to management systems.

The desirability of the goals depends on the development and formulation of the change vision. The change vision should be communicated by every means possible. Early proofs of success should be planned for, and created, to manage skepticism and keep the motivation high. Another point is not to celebrate victory too early, as this may deprive the entire change effort of momentum (Kotter 1995). Facilitation and support is the most effective way to deal with readjustment problems (Kotter & Schlesinger 1979).

Necessary changes should be made to management systems and human resource policies to enable adoption of new practices and sustain the change (Grover & Kettinger 2000). The management systems include incentives related to the organizational performance and key metrics for the system, training systems and even new career models if applicable (Markus & Tanis 2000).

Practical manifestations: The vision and related practical goals are appropriate and desirable for the organization. Early proofs of success are delivered and communicated to strengthen the credibility and legitimacy of the change project. Victory is not celebrated too early. Support and counseling is offered if necessary. Management systems and policies are changed to encourage new behaviors and discourage change-impeding behaviors.
<table>
<thead>
<tr>
<th>SUCCESS FACTOR</th>
<th>ADAPTATION TO ERP IMPLEMENTATION CONTEXT ACCORDING TO THE LITERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leadership</td>
<td>The leader(s) of the change are committed to the change, active, enthusiastic, inspire others to believe in and act on the change through their behavior. Leadership can be extended to the functional organization by recruiting and training change coaches across the organization.</td>
</tr>
<tr>
<td>2. Management support</td>
<td>Top-level executives are committed to the change, and set example and endorse the project in their speaking and behavior. They make sure project goals are linked with strategy, participate actively in the implementation, resolve conflicts, and make sure that the project has sufficient resources.</td>
</tr>
<tr>
<td>3. Need for change</td>
<td>Communicating the rationale for the change in a clear, timely manner, to everyone affected by the change, using every channel available, to create a shared understanding on the urgency of the change.</td>
</tr>
<tr>
<td>4. Participation</td>
<td>All people affected by the change have an opportunity to affect the solutions being implemented. The participation can be either direct or representational. The participation should be planned, in terms of timing, content and participants for each session. The participants should receive training to be able to contribute effectively in the workshops. Relevant information from the participation should be incorporated into the change plan.</td>
</tr>
<tr>
<td>5. Defining roles</td>
<td>The roles, responsibilities and authorities are clearly defined and communicated during the change process.</td>
</tr>
<tr>
<td>6. Planning</td>
<td>A plan for the change project is created, which includes the schedule, budget, work breakdown, resource allocations, and leaves some flexibility for the actual implementation process. The plan is realistic and schedules are achievable, and the expectations are communicated. The need to manage change is recognized, and the change resistance and potential for political behavior is anticipated and planned for. Early proofs of success are delivered and communicated to strengthen the credibility and legitimacy of the change project.</td>
</tr>
<tr>
<td>7. Goal setting</td>
<td>There is a sensible business case and a vision of how the organization should operate after the implementation. The strategic goals and deliverables of the project are clearly defined. A vision, that is compelling and easy to grasp, is created, to clarify the direction of the change.</td>
</tr>
<tr>
<td>8. Control</td>
<td>The execution of plans is monitored and the performance of the project team is controlled in a systematic manner. Any potential changes to the scope are evaluated against the business benefits of the implementation. The organization-system performance is also monitored according to the project-phase specific performance metrics. This means that the controlling aspect goes beyond go-live date, to establish the changes. Victory is not celebrated too early.</td>
</tr>
<tr>
<td>9. Training</td>
<td>Training is provided to both end-users, executives and IT workforce alike. The users need to understand the new processes, system use, and how their actions affect other processes and other parts of the organization. There should be enough time reserved for gaining these skills and knowledge.</td>
</tr>
<tr>
<td>10. Communication</td>
<td>Multiple channels are used with sufficient volume to communicate the change vision, project progress, clarifications to relieve concerns and any other change project issues. This communication reaches everyone in the organization and is continued throughout the change effort. Open and free discussion is enabled, and feedback and reactions systematically acquired.</td>
</tr>
<tr>
<td>11. Motivation</td>
<td>The vision and related practical goals are appropriate and desirable for the organization. Support and counseling is offered if necessary. Management systems and policies are changed to encourage new behaviors and discourage change-impeding behaviors.</td>
</tr>
</tbody>
</table>

Table 4 - Summary of the change management success factors adapted to ERP implementation context according to the literature
3.3. The strategic change process according to Hannus

Salminen’s model of change management success factors does not take stand to the domains of change or the change process as such. To overcome this lack I am using the strategic change process model from Hannus (2004, 219) to complement the success factors.

![Figure 9 – Model of strategic change process (Hannus 2004, 219)](image)

As seen in Figure 9, the strategic change process can be roughly divided into the development of people, and development of matters (Hannus 2004, 219). Hannus considers these being the two aspects of change management, which target several areas in the socio-technical system of the organization.

In my definition the change management targets specifically the different stakeholders of the project. Naturally they play a role even in the development of matters part. Even though development of matters may be considered to be more in the domain of traditional project management, effective change management needs to consider these aspects as well.

I find Hannus’ strategic change process model to be very useful for analyzing the domains of change for almost any kind of a planned change project. As it gives some idea of the change process also, it is a very useful addition to this Framework of managing change in ERP implementation project.

3.4. The Salminen-Hannus Framework

The change management success factors can be argued to be the means of attaining the desired goal, a successful ERP implementation in this case. Hence I have placed them into the change process as illustrated in Figure below.
Figure 10 - Salminen-Hannus framework: proposal for the prescriptive model of change management in ERP implementation projects

Figure 10 illustrates the Framework, which contains the domains of change, the current state and the desired state of the organization, and the change management success factors, as the means of attaining the goal of successful ERP implementation. This Framework is arguably a realistic and quite complete picture of the change process and its necessary ingredients for a planned change project. The success factors have also been adapted to ERP implementation context according to the literature.

3.4.1. Research questions related to the Framework

The research questions related to the Framework are:

1) Is this Framework a suitable approach for a prescriptive model of change management for the purposes of an ERP implementation project?

2) How could the Framework be improved to make it more prescriptive and better suited for ERP implementation project’s realities?

The empirical case and the method of empirical inquiry are described next, in the Empirical part of this thesis. After this, in the Discussion part of this thesis, the research questions are then answered in the light of the empirical case.
4. RESEARCH PROCESS & METHODS

This study follows the constructive research approach (Kasanen et al 1993), and is a single-case design (Yin 1994). The qualitative interview data consists of six interviews, from Wärtsilä Oy’s global ERP implementation project. The interview material gathered and processed between October and November in 2009 utilizing the theme interview method (Hirsjärvi & Hurme 1991).

In the theme interview method both the selection of the interview themes and the method of processing the results are essential to produce high quality results (Hirsjärvi & Hurme 1991). The roles of the informants, the interviewing process and limitations of the interview material also affect the interpretation and generalizability of the material.

4.1. Interviews themes

Interview themes were selected to get a good overview of the informant’s role, perspective to the project, and change management. It was of essence to get enough information for discussing and analyzing the manifestations of the change management success factors, the domains of change and the change process itself. As project documentation was unavailable to me, this information would need to be gathered from the interviews.

There were five themes altogether. The rationale for their selection and how they were used in the interviews are described below.

The first theme is: The informant. The informants held disparate roles in relationship to the project. This is why the informants were encouraged to give their personal view throughout the interview. It was vitally important to acquire understanding about the informant’s role and position regarding the project.

This topic served as the opening for the interview. Questions such as 1) How would you describe your role in the project, or 2) How did you become engaged in this project, would be used.

The second theme is: The project. The basic components of a project are objectives, schedule, scope, quality, cost, and delivery organization (Turner 2009: 7). These must be understood to understand the project or assess project success. Moreover, the change involved in ERP implementation project is the issue of the implementation project, and thus the process of creating that change is evidently embedded in the context of the project.

The project phases were covered on a more generic level with the global team members, and then on a more detailed, pilot-specific way with the representatives of the functional organization. A sample question could be 1) What happened after that, 2) What happened before that, and 3) What kind of phases there were in the project.

Towards the end of the interview questions such as 1) Which things worked particularly well in this project, 2) What did not work so well, 3) Would you do something differently if you did the same project again and 4) Do you wish some other party would do something differently, were also applied to get more information on the project and informant’s personal learning and viewpoints.
The third theme is: Change impact. In the context of organizational change, there are some systemic change variables, which in my understanding need to be covered in order to understand the phenomenon. The change management approach should be based on the magnitude and nature of change. The domains of change need to be understood, as well as the process of change (Hannus 2004: 219).

This theme was covered in the interviews with questions such as 1) What kind of changes took place in the organization due to this project, or on a more specific level 2) Were there organizational changes, or even more specific 3) Were there personnel reductions due to this project.

The fourth theme is: Reactions to change. Resistance to change is a common systemic phenomenon in change projects, which affects managers and employees alike (Dent & Goldberg 1999). There is strong evidence for causal relationships between several personal and organizational attributes, and reactions to change (e.g. Oreg 2003, Walker et al 2007). The selected change management approach also affects the reactions to change. Change management approach should not be assessed in isolation of the reactions to change.

This theme was covered in the interviews with questions such as 1) Could you describe the reactions to change, 2) How did the organization receive this change, 3) How about change resistance, 4) How about commitment and acceptance.

The fifth theme is Salminen’s change management success factors. Salminen’s model was chosen to represent a potential success factor list for ERP change management (see 3.1 for further reference). The definitions used for the themes were the original definitions provided by Salminen (2000, 97), as presented in Table 5.

<table>
<thead>
<tr>
<th>No</th>
<th>Success factor</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Leadership</td>
<td>The behavior and actions of the person or persons leading the change.</td>
</tr>
<tr>
<td>2</td>
<td>Management Support</td>
<td>The role and actions of managers who have authority over issues and resources critical for the project.</td>
</tr>
<tr>
<td>3</td>
<td>Need for change</td>
<td>Identifying and communicating the reasons for the change.</td>
</tr>
<tr>
<td>4</td>
<td>Participation</td>
<td>Involving those affected by the changes in planning and implementation.</td>
</tr>
<tr>
<td>5</td>
<td>Defining roles</td>
<td>Defining roles and organization during the change process.</td>
</tr>
<tr>
<td>6</td>
<td>Planning</td>
<td>Planning the change process in terms of what is to be done by whom and when.</td>
</tr>
<tr>
<td>7</td>
<td>Goal setting</td>
<td>Defining a vision and goals for change.</td>
</tr>
<tr>
<td>8</td>
<td>Control</td>
<td>Monitoring and controlling the progress.</td>
</tr>
</tbody>
</table>
Matilda Smeds: Change management success factors in ERP implementation

<table>
<thead>
<tr>
<th></th>
<th>Training</th>
<th>Training and educating the people.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Communication</td>
<td>Distributing information about the changes and gathering feedback from the people.</td>
</tr>
<tr>
<td>11</td>
<td>Motivation</td>
<td>Getting people motivated and committed to changes through active motivational efforts.</td>
</tr>
</tbody>
</table>

Table 5 - Salminen’s change management success factors and the original definitions (Salminen 2000, 97)

The success factors were brought to the discussion at the end of the interview, when the previous themes had already been covered. This was the most structured part of the interview, as the inquiry was conducted by presenting the list of success factors as it is. A PowerPoint presentation containing the success factors and their definitions was used as a visual aid in the interviews. The presentation contained the names of the success factors, and the short, original definitions as presented in Table 5. The success factors were visible on all of the slides. On each slide, one success factor was highlighted and its definition was given. This means that the informant could see all of the success factors at the same time.

Two questions regarding Salminen’s change management success factors were asked: 1) What is the significance of these factors for the implementation project’s success, and 2) What is their relative importance?

4.2. The contacting process

The contacting process of informants that led to the interviews is illustrated in Figure 11. The process started with my professor’s contact in the company’s Information Management (IM) department. Most potential informants who could be reached agreed readily to a research interview. One initially agreed, but then declined after seeing the interview questions. Some potential informants could not be reached. All in all, the informants were well prepared and very helpful in the interviews.

![Figure 11 - The contacting process of informants](image_url)

The informants are Wärtsilä employees who held key roles in the implementation project. Three of them come from the Information Management function, and were key members of the global implementation team. They are the project manager (PM), change manager (CM) and training manager (TM).

The other three informants come from Services Finland division. They are the rollout manager for the unit (RM), rollout managers “right hand” (RMR) and key user (KU). Services Finland, as part
of Wärtsilä Finland, participated in the business process definition phase, and the pilot implementation of the system and new processes.

The informants who participated in this study did so voluntarily, and did not receive any direct compensation for their efforts. This rich empirical material they have supplied is very valuable and also unique, in the sense that companies do not generally disclose this type of information. This case study should be interesting reading to scholars and practitioners alike, interested in change management and ERP projects.

4.3. Interviewing process

The interviews were conducted between October and November in 2009. The actual interview dates and details are listed in Table 6.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Informant</th>
<th>Stakeholder in</th>
<th>Interview date</th>
<th>Duration</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>Project manager</td>
<td>Global team</td>
<td>20.10.2009</td>
<td>48 minutes</td>
<td>Company HQ</td>
</tr>
<tr>
<td>CM</td>
<td>Change manager</td>
<td>Global team</td>
<td>22.10.2009</td>
<td>54 minutes</td>
<td>Company HQ</td>
</tr>
<tr>
<td>RM</td>
<td>Roll-out manager</td>
<td>Local roll-out team</td>
<td>29.10.2009</td>
<td>1h 16 minutes</td>
<td>Remote phone meeting</td>
</tr>
<tr>
<td>RMR</td>
<td>Roll-out manager's right hand</td>
<td>Local roll-out team</td>
<td>29.10.2009</td>
<td>1h 4 minutes</td>
<td>Remote phone meeting</td>
</tr>
<tr>
<td>KU</td>
<td>Key user</td>
<td>Key user in Pilot organization</td>
<td>9.11.2009</td>
<td>49 minutes</td>
<td>Remote phone meeting</td>
</tr>
<tr>
<td>TM</td>
<td>Training manager</td>
<td>Global team</td>
<td>10.11.2009</td>
<td>1h 7 minutes</td>
<td>Remote web meeting</td>
</tr>
</tbody>
</table>

Table 6 - Informants and interview dates

Two interviews were performed in a face-to-face setting, in Wärtsilä headquarters in Helsinki. The four other interviews were conducted over telephone. The reason for this was that the other four informants are based in Vaasa, and by this arrangement some time and money was saved. All interviews were recorded. The recordings were used in processing the empirical material as described later, and also in preparing for the subsequent interviews.

Two informants, the project manager and training manager had prepared presentations to give an overview of their role and project practices. This information is included in this empirical part.

Some informants volunteered to proofread the case study. The change manager and rollout manager gave their comments, and some minor changes were incorporated to the manuscript.

The themes were applied consistently in all the interviews, except for the inconsistencies mentioned below. The first four themes were covered in all of the interviews, and Salminen’s success factors explicitly in five.

The reality of the interviews was, that in the course of conversation many of these themes overlapped. The themes were also adjusted somewhat, mostly in how deep I would try to go within one theme. This depended on the informants’ role in the project and interests. It is quite natural that the project manager would talk mostly about project itself, and key user would talk mostly about
what key users do, training manager to describe the trainings, and so on.

The informants were aware that the interviews were about change management in their ERP implementation project. This was the given context of the interviews, communicated a priori to all the informants. The informants kept coming back to the topic change management, explaining the change management approach from their own perspective. It seemed that the informants had established, practical ideas on what change management is and how it should be handled.

In the interviews it was then my task to let the informant disclose their particular perspective, and in addition to the themes, try to ask only those questions that were necessary to cap all the information gaps, and to integrate the information given into a wider perspective of the project.

In addition to the themes described above, the informants were always asked about the aspects they were particularly satisfied with, and if there were something they themselves would do differently in hindsight, or wish someone else had done differently. This resulted in interesting learning points, which however could not be fully assimilated into this thesis.

The project manager and training manager had prepared slide sets, which they then showed to me during the interview. This was highly appreciated, as it served as an effective aid to get more comprehensive understanding on the project phases and general approach to competence development and key users functions in the project.

The Salminen’s success factors were explicitly covered in all interviews, with the exception of the project manager interview. In key user interview the success factors were covered without the visual aid. Hence it was not possible to assess their importance exactly in the same manner as in the other interviews. In the remaining four interviews, the procedure described above was consistently applied.

4.4. Method of processing the interview material

The actual processing of the recordings was done in the beginning of December. The interviews were recorded to facilitate the extraction and processing of information. The first stage of the processing was the preparation of a skeleton mind map with the help of a mind mapping software. Initially the mind map was arranged so, that each informant had his own branch. The interview themes were represented as sub-branches, separately for each informant. These branches were then filled in thematically while listening to the interview recordings.

The contents of each interview were written into its own branch with the themes as the sub-branches. The responses were color-coded by informant. After this the responses were consolidated under the overall themes. It was still possible to distinguish the responses between informants for the purpose of referencing and accurate representation of the empirical material.

This approach analogical to extracting information the interview onto numbered theme cards, as recommended by Hirsjärvi & Hurme (1991), applied with the aid of computer software. Figure 12 illustrates the consolidation process.
Figure 12 - The color-coded, thematically arranged responses were consolidated thematically into one mind map

This consolidated mind map served as the basic starting point for writing the empirical part, where the informants’ responses are described according to the themes. The processing of the interview material was conducted in a systematic manner, without exceptions.
5. EMPIRICAL PART

The object of this case study is the global ERP implementation project of Wärtsilä Oy. The study is mostly related to the Finnish subsidiary, and the pilot implementation project, which took place there.

The information regarding the project is based almost exclusively on interviews. The informants are Wärtsilä employees, who held key positions in the implementation project (see the informants in Table 6). The other sources for the empirical part are the company’s annual reports, and one Master’s thesis (Hirvonen 2004), which handles the line manager’s role as change agents in the pilot project.

5.1. Introduction to the company

Wärtsilä is a globally operating machinery solution company, headquartered in Finland. Wärtsilä was first established in 1834 in Finland, and has been in industrial engineering and machinery business for over a century (Wärtsilä 2009).

Today the company is an industry leader in engine and power solutions for marine and energy industries. According to the annual report, in 2008 the company’s turnover was 4.6 billion EUR, with 19,000 employees (Wärtsilä 2008). The company has 160 locations in 70 countries. The company has three business divisions: Ship Power, Power Plants and Services (Wärtsilä 2009).

Wärtsilä started the internationalization process of its manufacturing operations by acquiring a diesel business in Sweden in the late 1970’s. A subsidiary and a diesel engine assembly plan were set up in India in 1988. The last three decades of Wärtsilä history include a number of acquisitions, divestments, growth and organizational changes (Wärtsilä 2009). These developments may have made the company more change ready than many others.

The company culture is characterized by the slogan “we are doers” (Wärtsilä 2009). The company describes itself an “ambitious company, with an informal and open culture” (Wärtsilä 2010a). The company aims to recruit “flexible and quick-thinking doers”, “to succeed in the changing world” (Wärtsilä 2010b). It seems that the notion of being “doers”, taking initiative, fixing things, in an environment that is not very hierarchical is central to the company’s culture.

In this decade Wärtsilä has experienced strong growth, through acquisitions but also organically. The publicly available annual reports show, that between 2005 and 2008 the net sales have steadily increased, and that the operating result percentage has maintained a positive level between 8 and 11 percent of the net sales. The development of net sales and operating result percentage are illustrated in Figure 13.
Figure 13 – Wärtsilä’s business results from 2004 to 2008 (Wärtsilä 2006; Wärtsilä 2008)

As the case project took place between years 2002 and 2007, it is valuable to realize what the overall business results have been during that time.

5.2. Introduction to the global implementation project

In Wärtsilä’s global ERP implementation project SAP R/3 system was introduced into the entire company. The rollouts were phased, and conducted country by country, although run in parallel after the pilot implementation project. As the Finnish subsidiary is the largest, it became the venue of the pilot implementation project (see project phases in Figure 14). This chapter introduces the global implementation project in terms of project timeline and phases, scope, drivers and objectives, implementation approach, project organization and project success.

5.2.1. Project timeline and phases

The ERP implementation project started in the beginning of 2002, and was ended in 2007. The implementation project phases are illustrated in Figure 14.

1. Preparation phase begun in January 2002, and ended in August 2002. In this phase the modules to be implemented were chosen, and the project plan was created.

2. Blueprint phase followed the preparation phase. In this phase the current business processes
were defined, and the new “Way of Working”, e.g. new processes were designed.

3. **Global template phase** was carried out simultaneously with...

4. **WFI Pilot preparation and Implementation** (Pilot project conducted in Wärtsilä Finland subsidiary), starting from January 2003, until Pilot go-live 1st of February 2004.

5. **Global rollout preparations** were conducted simultaneously with...

6. **Pilot handover and support**, which lasted through the year of 2004.

7. **Global rollouts** begun in April 2004. They were carried on, until 90% of the company’s operations were included in the new system. The implementation project ended in 2007.

Figure 15 illustrates the project phases covered by the informants. The main content of the interview material is the Pilot implementation project, the preparation phases for the same, and the support phase that followed the pilot go-live.

It is to be noted, that there are several aspects to the project that do not link to a specific project phase, and also, that particularly the informants from the global project team also commented the project in its entirety. The pilot project’s objectives were tightly aligned with the objectives of the entire project. The pilot implementation project’s process can be considered a prototype for the rest of the rollouts, which in essence had the same scope and objectives.

5.2.2. **Project scope & drivers**

The scope of the global implementation project was to implement 13 SAP R/3 modules into the company: Finance, Controlling, Sales and Distribution, Warehouse Management, Materials Management, Plant Maintenance, Quality Management, Customer Service, Business Warehouse, Cross Application Time Sheet, and Travel. Coincidently the Finnish subsidiary had all these operations, making it the suitable location for the business blueprint phase and pilot implementation project in this respect as well.

The single most important driver for the project was that several larger subsidiaries, including the Finnish subsidiary, needed to replace their operational systems, so that they could cope with the
increasing transaction volumes. The subsidiaries had local IT systems in place, some were running SAP independently, and some were using some other system.

The company wanted to achieve concrete business benefits from this inevitable system change, so they opted for the implementation of global ERP system and processes, which would also induce savings and thereby improve profitability. The savings would be derived from process harmonization and automatization, improved data quality, easier global information sharing and efficiencies in information management. The saving targets covered almost all the functional areas of the organization.

5.2.3. Implementation approach

The company opted for a phased implementation approach. The same globally standardized solution and processes were implemented throughout the company, country by country, in phased rollouts. Local adaptations were made to comply with the local legislation and regulations. Other deviations were not allowed.

The first rollout was the pilot implementation project in Wärtsilä Finland. The pilot project lasted for about one year. After the pilot rollout, essentially the same solution and processes were rolled out into the other subsidiaries. The global rollouts were conducted as about 6 months projects, which were arranged into planned releases.

5.2.4. Project organization & terminology

The project organization was assembled in proportion to the project size. The core team had completed another successful project already in 2001. The rest of the global project organization was arranged around this core team. The global project team consisted of about 50 Wärtsilä employees. There were 20-30 consultants on the project, depending on the project phase.

Within the global project organization there were country specific rollout teams. Approximately 7 people from the global team would handle a rollout for one subsidiary. The members of the global team were based either in Finland, or migrated to the target country for about 8 months. Each of them would have a named counterpart in the local rollout team, selected from the local organization. If the subsidiary could not complete the given tasks before a set release, they would need to wait for the next one.

For each country specific rollout, a local rollout manager and other local roles would be assigned, and this local project team would act as the local counterpart of the global project organization. The same principle was followed even in the pilot implementation project.

In this thesis the term “global project” refers to the entire project. Local or subsidiary rollouts comprise the main part of the global project. “The pilot implementation project” was the first local rollout project. “Global project team” refers to people working with the entire project, who generally would come from the Information Management (IM) department. “Local rollout team” or “local project team” refers to the people working on their individual rollout project locally, who generally would come from the local business organization.

It is to be remembered that the pilot implementation project was part of the global implementation project. “Pilot implementation project” and “pilot rollout” are synonymous terms. The pilot rollout was also a type of the subsequent (“global”) rollouts. In many cases the implications apply to both
the pilot and global project’s context. In these cases the more indefinite reference to “the project”, or to “the implementation project”, should be sufficient.

5.2.5. Project success

The available data concerning the project success is incomplete, since financial details and the business cases could not be disclosed. The project performance, business case attainment, perceived success and company performance, can be discussed only to the extent allowed by the interview material.

Project performance is an important question, which cannot be addressed based on this data. The planned or actual figures regarding project budget and business case will not be disclosed. In the informants responses it is evident that the planned pilot implementation project schedule was not attained, and that the pilot go-live was moved six months further, from August 2003 to February 2004. Any schedule overrun usually reflects in budget overrun, although not necessarily in the same proportion. However, more important than the ability to strictly adhere to the original schedule, is the ability to deliver the expected return on investment, considering the project costs as one factor. It is impossible to estimate how great the impact of the schedule overrun in the pilot implementation project was concerning the whole project budget, or whether there were other issues with the schedule and budget.

Project manager and change manager estimated that the business case (financial benefits) was exceeded by approximately twofold compared to the original business case. However, the sources of savings and the timeframe of benefit realization were not necessarily the same as planned. Exceeding the savings targets might be enough to temper the budget overruns, so that the return on investment would not be compromised.

All informants perceive the project successful. Several facets of the project success were represented. The project manager points out, that the new system has enabled the company to manage and consolidate its operations on a global level. New improvements enabled by a centralized system are still being made.

The local rollout manager notes that the system has enabled higher productivity, tempering recruitment needs in the times of 20% annual growth in business volumes. The aspect of sensible business processes mentioned by the key user is embedded in this. Both of these factors would have direct impact on company’s profitability, and thereby improve the return on investment.

These accounts prove that the informants are satisfied with the project outcome; the processes make sense, the system works, and it enables transparency, and global management of the company.

According to the annual reports, the company’s financial performance has been very positive since 2005. This coheres with the time when the Finnish subsidiary had recovered from the implementation and the system had become stable. The profitability has also improved between 2005 and 2008, which may be partially attributable to synergistic improvements enabled by the implementation. The lower profitability in year 2004 could also be due to the costs of the pilot project, global template phase, and global rollout preparations. Although direct causality cannot be verified, these numbers do comply with the informants’ accounts.
5.3. Introduction to the pilot implementation project

The case focuses mostly on the pilot implementation project. The Pilot implementation project was the first rollout, and the same people who were involved in it, were also largely involved in the Business blueprint, solution development and testing phases.

The overall objectives for the global implementation project were laid out in 5.2.2. The Pilot project started on 1.1.2003 and the actual go-live date was 1.2.2004. The support period for the pilot lasted throughout year 2004. Parallel to the pilot implementation project, the global template was also being developed. The global template comprises the system configuration that was implemented in the subsequent rollouts.

According to the project manager, the Finnish subsidiary was the riskiest implementation, but the project had to start in Finland, to avoid the “Not invented here” syndrome. The Finnish subsidiary was the biggest business unit with the highest risks, highest number of end users and highest complexity of business operations. On the other hand, all the functional processes of the corporation were present in Finland, and the full scope to be implemented would also be implemented there. For this reason Finland was a good location for the business blueprint and system configuration phases. Additionally, the global project team was based in Finland.

5.3.1. Phases specific to the pilot implementation project: Blueprint & Configuration

The ERP implementation project was a global project that included dozens of rollouts into the local subsidiaries of the company. Since the same solution and processes were rolled out with only minor localizations, the blueprint and configuration phases were conducted only once. Since they were conducted in Finland in conjunction with the pilot project, even by the same resources, they become unique characteristics of the pilot implementation project – in comparison to the subsequent rollouts.

Blueprint phase preceded the pilot implementation project, and configuration phase was probably made partially at the same time. The company employees that participated in process definition and validation testing were mostly from the Finnish subsidiary, and thereby these phases become an aspect of participation, that is exclusively specific to the pilot implementation project.

In the blueprint phase Wärtsilä developed global business processes for the entire company, called the new “Way of Working”. A neutral process description was written for each process, without specifying the application or organization.

During the Business Blueprint phase we defined all our processes, while SAP was kept outside the room. Our intention was to write a neutral process description, without including the organization or application (CM).

In this phase even some of the regular employees participated in the process evaluation. The Finnish subsidiary could also affect the outcome to a great extent.

We started by defining the Wärtsilä Way of Working. This meant defining the global business processes for the entire company. We (the Finnish subsidiary) had the opportunity to affect this quite a lot. The Wärtsilä Way of Working became quite similar to Wärtsilä Finland Way of Working. In the blueprint phase even regular employees gave feedback and evaluated these processes (RM).
The aim of the configuration phase was to configure SAP according to the blueprint. The Finnish subsidiary participated in validation and user testing.

Then the configuration phase began, where the aim was to configure SAP according to the blueprint, and there we did validation and user testing (RM).

In the rollout manager’s estimate the key users and even the end users that participated in the testing were committed and really wanted to make the system work.

I may argue that we had a quite committed key user community, who really wanted to make the system work. Also the end users who participated in the testing really wanted to make the system work (RM).

The same atmosphere of resoluteness to make things work is reflected in other interviews as well. The very significant role of key users for implementation success is covered in detail in 5.4.

5.3.2. The go-live in the pilot implementation project

The go-live event in the pilot implementation project was somewhat problematic. In the go-live event, the transition to the new system and processes happens literally over night (usually and also in this pilot implementation’s case over the weekend). The organization has to operate in the old mode all the way until the point of go-live, and start fresh in the new mode immediately after the new system has gone “live”. This cutover nature makes the go-live event particularly challenging. There were also additional challenges related to some mismatches in the tuning of the system and processes. These issues were solved however, with hard work and some specialist help.

The aim with the go-live was to move into the new system with minimal interruption to the day-to-day business. This was challenging for the high transaction levels that were already hitting the limits of the old system.

The go-live time was very challenging, due to our high transaction levels. At that time we had invoicing of almost 1 million EUR on a daily basis, over 200 shipments, 30000 material ids in the warehouse, and all this would need to be migrated into the new system over one weekend. This cutover was a more massive exercise than perhaps any of us had thought before we started it (RM).

In the pilot implementation project’s case the ERP go-live was challenging due to several reasons, but even more so, as there were unexpected problems related to fine-tuning system and the processes, that appeared only after some time had passed since the go-live.

In the beginning of February 2004 we did not yet realize there were problems. We started to see only little by little that something had gone awry (RMR). The first 2-3 weeks went quite fluently. Then the problems started to materialize (RM).

5.3.3. Critical challenges after the go-live

Some critical challenges were faced after the go-live due to unexpected mismatches between the system and the process logic. Some issues also arose due to lacks of understanding regarding how an integrated information system works. These challenges could be observed only after some weeks had passed since the go-live. It took several months before they could be solved to a sustainable degree. In the next paragraphs there are some examples of these challenges.

Some processes became virtually dysfunctional, as the mismatches made them less effective, and therefore not sustainable considering the transaction volumes and the manpower in use. Apparently
there was some adverse effect for customer satisfaction as well.

For instance in spare part business, the new system had unexpectedly a different shipment logic, which we only noticed after a while. Earlier if the full order was not found in the warehouse, the missing items would be delivered in one backorder shipment, 2 boxes in total. Now, the system was rigged so that every time new material came into the warehouse, a new pick list was printed, and a new backorder shipment was made. It was intolerable. There were boxes everywhere. Even the customers were irritated, when an order of 10 lines would be shipped in 7 boxes (RM).

The logic of data-inputs and the required discipline applied in an integrated system had to be learned. The in-adverted errors made with the data-inputs also became visible only a couple of weeks after the go-live.

We also had challenges in data entry. The integrated new ERP/SAP was designed so that data entry should take place where the information first was available not where it was first needed. This moved many data entry points to a much earlier place in the handling, it even moved data entry points out from the Services business unit into Power Plant or Ship Power projects. Missing data did not stop processing the orders forward several steps. Only later in the process where the missing information was needed it was noted that something were missing. This created a need to trace back and reverse orders and actions in order to correct what was missing (RM).

Prior to the implementation our way of working was more manual, and based on local information systems. The processes included local fixes, which were not documented. Then [after go-live] they notice in the warehouse that there is something missing in the shipments, which should have been done at the very beginning of the process, and the boxes would need to be shipped anyway. In an integrated system nobody was fixing these things. Go-live was the biggest change, and all the problems then appeared virtually over night (PM).

The trial go-live for the pilot project was more technical in nature, and did not reveal these tuning problems in the system or processes.

Of course we had a trial go-live for the actual go-live, but it was more technical in nature, and did not reveal any of these tuning problems (RM).

When these issues started emerging the attitudes towards the new system were quite negative.

We did have problems at the go-live. I believe most people would have thrown the new system out of the window at that time. Today, I don’t think there is anyone who would want the old system back (PM).

The situation seemed hopeless in the sense that people did not know how the system should work or what should be done next.

It felt quite hopeless at times. It seemed like no one understood how SAP would work, and what we should do now. It was even a little difficult to make people believe that yes this will succeed. After the go-live the old system seemed like the best system in the world (RMR).

Even though there was a rollback plan in place, reverting to the old system was not possible. The new system simply had to work.

We did have a rollback plan in place, at the time of the go-live. I do not think that migrating back to the old system would be a real option after running the new system for a month. It just had to work. So we did everything we could to make it work (RMR).

The problem was accentuated because the Key Performance Indicator (KPI) reports that were supposed to give information on the organization’s performance were few and flawed, and did not reveal the root-causes of the problems. This problem was fixed later on.
5.3.4. Solving the problems

The acute phase lasted for several weeks after the pilot project had gone live. In April the problems were communicated to the global team, and support was given to solve the greatest deficiencies. Three very senior consultants were brought in, and in two weeks they could identify the root causes. After this the situation became better.

At this point we started discussing with the global project team, that we cannot continue and this must be fixed. It was hard work to try to identify the causes of the problems, and then the solutions to them (RM).

The acute phase for these problems was March and April. In March the feeling grew stronger, and in April we strongly communicated about the issues, and started getting support. The global team verified that everything was not working as expected, and then focused on the issues where we saw the greatest deficiencies. We also got incredibly good support from the system provider. They analyzed what had gone wrong, and then it got better (RMR).

There was some debate and discussion on who is to blame. We brought in 3 very senior consultants, that analyzed the entire process chain from end-to-end, and after two weeks showed, that these are the problems. It was a long list and everyone could see that these are the problems. End of debate (PM).

The situation did become normal, but there were some difficulties almost through the year of 2004.

All in all, the initial difficulties lasted almost all of 2004, before the situation became normal (RMR).

The learning actually takes time, so the practical work becomes slower after go-live. The fine-tuning issues described above caused additional demand of overtime on the employees. After this phase of 4-6 months things became more normal.

When we take a large new system into use, the practical work is slower, because learning takes time. And the system was not working properly in the beginning, so we had to put in huge amount of extra time. People were really tired. This phase lasted for 4-6 months, about half a year. It was quite tedious during that time, after that we could continue (KU).

Other practical arrangements during that time that aided recovery to normal business were the onsite and offsite support, that spanned the entire year 2004, and the issue tracking system, which is still in use today.

The onsite support consisted of senior experts that were on-site for 4 weeks after go-live, whom we could contact if we had any concerns throughout the entire year 2004. Collaboration with them worked quite well. An issue tracking system SIP was also rolled out perhaps during year 2004 already, and in the stable phase we could make tickets into the SIP (RMR).

5.3.5. Stable phase & system improvements

This section describes the situation after 2004, when the system and processes became stable and business could be conducted in a normal manner again.

After these demanding initial difficulties the system and processes became more functional and the organization was able to move on.

We were able to continue (RMR).
The system became better, and is still being improved further. Now the improvements are related to fine-tuning the system. The system is being developed on a continuing basis, to e.g. comply with changed regulations.

The system became a little bit better. Of course this is an endless process, perhaps a global ERP system cannot become complete. We continue to have a large amount of improvement suggestions, but now it's more about fine-tuning the processes, to make them more fluent, logical or more automated (RM).

Of course we keep developing the system and processes on a continuing basis, because for instance changed regulations need to be incorporated to the system (KU).

The key users continue in their role, as communication agents and competence builders. There is exchange of information between Information Management department (IM), key users and end users, so that the key users act as a moderating interface between IM and end users. Even in official meetings there is time dedicated to system communications. The key users also engage in informal communication to support the end users in adopting the changes.

In our monthly meetings there is always a small section dedicated to SAP, the renewals and changes. I always send email to the end users separately, if the need arises. The end users sit quite closely by in any case, so they come and ask if there is something, and then I go to their desk and we talk it over (KU).

The IM department arranges e-meetings to all key users several times a year. Key users act as an interface between IM and end users, by taking new information to the end users, and by initiating the change requests regarding system functionality.

Now, after the go-live, the IM department arranges global e-meetings to key users approximately every two months. The key users need to take the new information to the end users. Likewise, system change requests are always initiated by the key user (KU).

5.4. Specific features of organizing the work in the pilot implementation project

5.4.1. The key user concept

The key users were important in all of the rollouts in building organizational competence for the new system and processes. They also played a crucial role in the pilot implementation project, in the solution building and testing phases.

Key users are employees, who are supposed to understand both the application and the process, so that they can guide their named end users into the right way of working. Key users are an official part of the company’s way of working today. In the project, key users were an important form of representational participation in the solution and competence building phases.

The key users are a part of the local way of working. Every organization has key users, whether they are official or not. We wanted to make them official, so that they could guide the new employees to the right way of working. It is very beneficial that the key users work in a harmonized way (TM).

The key user concept was initiated in the pilot implementation project. The local rollout team selected the key users in the early stages of the pilot project. The key users had particular roles assigned to them in validation testing and training the local employees.

For each system change, the key users will receive information first, and then assume the responsibility that the change will work for all the end users that are in their group. So they continue to act as change agents (RMR).
For the Finnish pilot project the key users were Finnish, and local key users were recruited for the subsequent global rollouts. The number of key users was approximately 10% of the number of employees in Services Finland.

The change touched almost everyone, but it was not possible to involve everyone in the project activities. So we took the key user concept to use, and about 10% of our resources became more involved than the rest of the users. They represented all the end user groups (RMR).

One of the first tasks we received was to define a certain number of key users, to help the global ERP team to achieve certain things, namely in the validation tests and training the rest of the local employees. The key users in the pilot project were Finnish. Local key users were recruited for the global rollouts. In Services Finland department we had about 450-500 employees, and perhaps 50-60 key users (RMR).

The most experienced people with good functional understanding were usually asked to become key users. As the rollout manager noted in the key users were quite committed to making the system work. The key user motivation could have stemmed from an opportunity to get new challenges and influence the implementation, which in turn had direct impact on their work.

We selected mainly those who had good functional business understanding. Of course they had to consent to becoming a key user. For instance training others could be a hinder to some people (RMR).

The recommendation was that we should always try to get the best and most experienced people in, and I believe we succeeded in this quite well. We used the key user concept in such a way, that during other companies’ rollouts in 2005-2006 our key users were also partly participating in the process, and supporting these companies (RMR).

Participating in this project was good, because it had direct impact on my own work. I felt I had the background for this, since I have been working here for quite a while, and I was asked for the job. I think the end users accepted it also. I know certain things about the business because I’ve been here so long, and I know many people around here (KU).

The key users actually participated in all the testing phases. This was one form of representational and influential participation that occurred during the pilot project.

As we had the pilot project, we had the opportunity to engage key users into all the testing phases. They were involved in defining system functionality before go-live, and that is why we believe we had a stronger commitment in this process. It was probably different for the other offices, where the solution was given, and the development phase was not required in the same sense, that the processes only needed to be compared to the solution. We believe that here the commitment rose from our involvement in development and system testing phases (RM).

The key users worked for 8 months before the rollout project begun, to build and test the system. They went through all processes step by step, and with the input of SAP consultants adapted the processes to the system.

In Vaasa there was a specific building reserved for the building and testing of the new system. I spent about 8 months there before the rollout project begun. All the key users belonging to the same process chain went through the processes step by step. The SAP consultants always gave us information about the system, and then we worked to adapt the process to the system (KU).

We also had to control the system functionality, and compliance to the Finnish law and regulations (KU).
5.4.2. Working practices between the global and local project teams

In the rollout project, the global team had preplanned the tasks and the schedule, and assigned these tasks to the local team. The global team gave the blueprint and configuration definitions, and also instructions regarding how to communicate with different stakeholders.

We had intense interaction and coordination between the global team at the time of the rollout project. They had the blueprint and the configuration definitions we needed to follow. They constantly communicated how the different tasks should be done, and gave a schedule when different things should take place, and how to communicate this to the different stakeholders. In the beginning the emphasis was more on informing us about the general plan and what is currently going on. In the beginning there were not so many tasks, but as the go-live came closer it became much more intense (RMR).

The global project team considered the pilot implementation a priority, and they coordinated and controlled the actions and progress very closely together with the local pilot team.

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It was essentially constant interchange of views. There was a monthly rollout manager meeting where we looked at the progress, and then there were smaller meetings, where we looked at the progress of specific tasks. The global team had named contact persons for their counterparts in the local team. So there was plenty of interaction on various levels (RMR).

5.5. Change impact & reactions to change

This chapter discusses the change impact and reactions to change mostly from the pilot implementation project’s perspective, but also the company-wide perspective is reflected upon.

All in all, the project was a massive effort for the company. The project as such was internally marketed as the biggest business improvement project the company had ever undertaken. Each rollout brought an immediate and radical change impact to the implementing country organization at the time of the corresponding go-live. The new system has enabled the company to manage operations globally, which has brought more changes to different parts of the organization.

There were immediate changes at the operational level brought by the go-live. The organization would go though a pervasive change impact in a cutover transition, which affected processes, job descriptions and resource needs. Temporally this change was also very intense to implement. These changes were directly linked to the project scope and activities, and were present in all of the rollouts.

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In the pilot implementation project the reactions to change varied a lot depending on the individual, and also changed through the time. Additionally, more change reactions emerged at face of the
unexpected problems that occurred after pilot go-live as discussed in 5.3.3.

5.5.1. Radical and pervasive change impact at the go-live

The change impact was radical and pervasive at the operational level. The change touched all parts of the functional organization. The processes, and their level of automatization underwent many changes, as the harmonized processes were introduced. The new processes and new system affected the resource needs within the functional organization. Thanks to the business growth it was possible to even out these differences quite well through job transfers and new recruitment. The project did not directly cause layoffs. The project did not cause direct change to organizational structures. The project was more about installing a harmonized way of working embodied in the standardized, global processes, and the adoption of an integrated ERP system.

The nature of the change was radical, taking the following aspects into account. The scope of the change was enormous. The cutover type of transition together with the requirements for continued operational effectiveness increase its radicalness. The fact that there was not enough understanding of the full implications of adopting an integrated system further contributed to this.

It was radical, pervasive change to the entire organization (RMR).

Due to the cutover nature of the go-live, the switch between the old process and the new process needed to happen virtually over night. In the pilot implementation project, full operational performance was expected from day one.

I would compare this to transplanting a heart for a 100-meter sprinter while he is running that 100-meter sprint, it is the same thing. The old system was shut down on Thursday 16:00, and the new one would be live on Sunday afternoon. On Monday morning we needed to have full capacity (RM).

Various remarks reflect the situation that there was no full understanding of what the real implications of adopting an integrated system would be. The project manager ventures that it may be impossible to fully understand the change impact, without having actually done it.

No one, not the project team or business really understood what we would face when one embarks on this kind of a project. The biggest surprise or learning was what does an integrated system on a global level really mean for system development, processes and managing the business. You need to do this kind of project yourself to know what it really means. We did have several benchmarking discussions before starting. Later we had to admit, that no, we did not understand (PM).

Changes to all of the business processes

All of the business processes underwent changes, in the pilot implementation project as well as in the subsequent rollouts. Some changes were due to process improvement, others due to system rigidity. All in all, much more discipline was required from the organization in the use of the new integrated system. Some changes were particularly challenging, for instance the changed data entry points, caused by the integrated system. Sometimes process changes affected job descriptions, as activities were redistributed among process actors.

The implementation of harmonized processes has been an important change, even from today’s perspective.

The most important change even from today’s perspective is the implementation of harmonized business processes. Not just the system implementation (TM).
Even though the new processes were quite similar to the old processes of Wärtsilä Finland, all processes needed some adaptation to work with the system. If this was the case for the Finnish pilot implementation, it is likely that even more changes took place in those subsidiaries where the processes differed more from the Finnish way of working.

Even though the Finnish subsidiary had the opportunity to affect the process definition phase quite a lot, all processes underwent changes. The ERP system is quite rigid in some ways, so it was necessary to adapt our own processes to the system (RM).

Practical examples on the changes are covered in the following quotations.

Financial management changed a lot, purchasing, logistics, spare-part management changed as well, project management did not change that much (TM).

In Services Finland new user interface and new processes were implemented in sales, purchasing, warehousing, and in field service. New reports were taken into use (RMR).

The proper use of the system required much more discipline from the organization.

The centralized system imposed an increased level of control over the organization, in the sense of cost management, improved data quality and standardized processes. In many activities this required much more discipline from the organization (TM).

The data entry point changed in many processes, so that some person - other than the end user of the data, became responsible of maintaining the data. Sometimes this person would be located in another organization, as the processes became integrated. This becomes a matter of communication and motivation. This aspect is also apparent in the previous chapter.

It was very challenging that the data entry point was removed in many processes from the person actually using the data. In the old way of working, the person using the data would always maintain the data. Now, in the integrated system someone else would become responsible for maintaining the data in the system. For instance a project manager in Power (another division) would be responsible for entering certain data, which would be used by his counterpart in after sales delivery. There is the question of motivation. If I don’t need this information in my daily work, why should I maintain it (RM)?

The training manager mentions the same point. One challenge in the implementation project is the creation of the overall understanding of the integrated process. One would somehow need to see what happens before one’s own effort, and what happens afterwards.

The integration between the modules and creating the big picture for the end user are the challenges in a big ERP project. Perhaps more generalized training is needed, not just about the global job type. Integration training, so that everyone would see more than their bit. One needs to see what happens before their own effort, and what happens afterwards (TM).

The process activities were often redistributed among the process actors, both due to process improvements and system rigidity.

Many changes were made in how the activities were shared between process actors, partially due to process reengineering, and partially depending on the requirements of the new system (RMR).

Due to the process changes, there were also changes to job descriptions.

There were changes to job descriptions, as the processes started to work with a different logic (RM).
Moderate organizational & human resource impact

The organizational and human resource impact could be characterized as moderate. There were no layoffs or restructuring efforts connected to the project visible in the empirical material. Also, the changed skill requirements were evened out quite well due to business growth, at least in Services Finland.

The implementation project was not connected to strategic restructuring of the organization, at least in Services Finland.

Due to business growth, layoffs were not necessary at any part of the organization.

Although the changes in processes caused changes in skill requirements, at least in Finland Services, these differences could be settled quite well.

Signs of cultural change were not directly visible in the interviews. The key user marked that it is difficult to say if the actual mode of operations have changed. Perhaps the company culture already contained many of the elements required for a successful implementation project and efficient, disciplined use of the new system. It is also possible that the cultural changes have become so embedded in the every day work practices, that they cannot be made explicit by this method of inquiry. However, the changes in competencies and structures must have had some impact on the culture as well. A larger sample of interviews, including also end user views might have given further insight into this matter.

5.5.2. Increased organizational capabilities caused by the change

The global ERP implementation project increased the company’s capability to manage its operations globally. The enabling factors were process harmonization, increased transparency and system-enabled ability to centralize operational activities.

Capability to centralize operations effectively

The system has given the company capability to centralize operations effectively. One example is
the current centralization of spare part warehousing in Europe.

Sometimes we have tried to guess what the organization would look like without this system. For instance we are currently centralizing 7 European spare part warehouses into one single location. This was definitely not included in the original business case, but would not have been possible without the new system (PM).

Other example is the centralization of all invoicing into one locality. The centralization and integrative benefits have also increased when more functionality has been implemented.

The new Way of Working is better designed for global operations. The more functionality we have been able to implement, the more benefits we have been able to reap. Network companies invoicing activities were centralized to the respective Product company for their products so in our case a huge amount of network companies customer invoices was to be created by our invoicing team in Finland, and all intra group transactions such as PO, acknowledgement of order, IG invoice was automated in the new system. The first year after go-live we did not get these benefits yet, as we were the only country live in the new system (RM).

The IT governance model for the operational systems has changed, so that all system development initiatives are now managed and prioritized on a global basis. Earlier the ERP system development would be managed and performed by the individual countries.

The IT governance model for the operational systems has changed fundamentally. Before this, the decisions and implementations on any IT system changes were made by the subsidiaries. Now we have a global development team, that considers the priorities between all the 70 countries. This implies that some changes that would have been made before, are now simply not done (PM).

Taking the above into account, the IM function has become more centralized than before, although the biggest change took place already before this implementation.

Before this project we centralized IM, so maybe IM had taken the blow at that stage already (CM).

**Development of change management, process management and knowledge management competencies**

The project has certainly increased awareness of change management in the organization. The deployment of change management has also increased change management competence in the organization.

We still practice change management in all the projects that we do. We don’t perceive change management as a separated part of the project. It is of absolute necessity that it is seen as an integrated part of the project. We must be aware of it, so that it is visible in the communication. It has not been easy to learn that one needs to be active, positive and change oriented in all communications (TM).

The implementation has shifted the general thinking towards process orientation, and the cooperation between the countries has increased. The importance of the global manageability has become evident only after the project.

The current situation is that there is much more cooperation between the countries and the different divisions. The way of thinking has become more process oriented, even though we are not yet as far as I think we ought to be. If there is a desire to manage operations globally, this kind of system is required. And the importance of global manageability has become evident only after the project (PM).

Due to the intensity and business orientation of the project plenty of competence related to the understanding of the organization was created within the project team members. Although the quote below only hints on this result, I do think the conclusion itself is justified.
The knowledge and understanding of our business that was created in the process of the project has been in real
demand within the company. Almost everyone who participated in this project still works for Wärtsilä. Some
project team members have also chosen to stay abroad (PM).

Key users had a very important role through the preparation and implementation phases of this
project, but also continue to perform as a link between end users and system development. They
play a crucial role in the development of the end users’ system and process related competences,
and also in the identification changes in business needs that would reflect on the system
requirements.

5.5.3. Reactions to change

All in all, the reception and the reactions varied. The reactions to change also varied over time. The
whole scale of reactions was present in the pilot implementation project, from enthusiasm to
rejection.

The reception was varied. Many thought that it was really interesting, and some were questioning the
purposefulness of the project altogether (TM).

We had all kinds of reactions, some were ambivalent - “makes no difference to me”, some were exceedingly
enthusiastic - “it’s going to be a great solution”, and some were directly opposing - “go home, we don’t need
this”. We do have 700 people in Finland after all (RM).

The somber feelings after the pilot implementation project go-live that were partially caused
because of the unexpected problems are also to be counted as a reaction to change. These were
described in more detail in 5.3.3.

The reactions to change also varied over time, both from the local project and global project’s
perspective.

In the reactions to change there is the U-curve, first it’s a total disaster, and then the mood gets a little better and
then the performance improves too (RM).

Actually the change response depends on when you ask. There was a lot of complaining in the beginning, because
people did not want to change the system. Today, I don’t think anyone would want to go back to the old system
(PM).

Apparently there were adverse change reactions as well, but degree and reasons may have varied to
a great extent, and cannot be properly evaluated based on this data.

One interesting finding is how the gaining evidence on the project success affected change
reactions. According to the project manager more and more evidence on project success was gained
with every rollout. Due to the synergies, the subsidiaries started to prefer being “in” rather than
“out” the system. This is somewhat related to Kotter’s (1995) concept of quick wins, even though
the wins (in terms of successful go-live rollouts) are not exactly quick in an ERP project’s context.
However, this evidence could be planned for and gained starting from the early phases of the
project.

There were quite a lot of doubts about whether the system would work or not. We gained more evidence with
every rollout. The threshold to oppose the implementation increased, and at some point it turned around. People
started to realize that if they don’t get this, they are out. So “pull” started to emerge, and not so much “push” was
required anymore. Change management is not needed to that great extent when people are happy just to get the
system. This is the approach, take care of change management in the initial stages, and get evidence that it is a successful, important project (PM).

5.6. Manifestations of the change management success factors

5.6.1. Leadership

Both the global and local leadership played a significant role for this project’s success. The same applies to the project leaders’ actions. The starting point for the project was good, as it was supported from the highest ranks of the organization. At least in the pilot project’s case also the local leadership was committed to the implementation project success, and also took a visible role in it. The project leaders’ actions also influenced the project success to a great extent.

The difference between the success factors leadership and management support needs to be clarified. I have chosen to include top management support in the leadership section, rather than in the management support section. The reason for this is explained below.

Support for change is naturally a prerequisite for change promoting actions. It seems that the informants’ mentions of top management’s support were always connected to their change advancing actions. When the informants talked about the role of top management, they usually used the word support or commitment. These mentions always hinted on change promoting actions taken by the top management. These actions in turn are expressions of change leadership according to Salminen’s definition. This is why support from top management is covered in this section, not in management support.

The project had top management support from CEO/CFO level from the beginning of the project.

The starting point was good in the sense, that we had strong top management support from the CEO/CFO level, CFO acting as the sponsor. The project was intrinsically important, there was not debate on whether it would be done or not (CM).

We had the support from the highest ranks of the organization (RMR).

The leadership of the project management and the CFO as the sponsor was required, to show the direction of the change. The front line also put in a lot of effort to solve any problems.

Someone needs to step forward and stand in the first line and say which direction we will take. There were the project manager, change manager and CFO in the front line. The CFO gave his full support if there were any issues. They worked very hard if any problems occurred (TM).

Top management support helped in communicating the need for change.

We had support from high ranks in the organization, namely the CFO. So we were able to make the company understand the importance of this implementation, why we are doing it (TM).

All informants essentially confirm the importance of top management support. Also what the key user mentioned that the CFO asked her to take up the key user role is a clear sign of top management involvement.

The chief financial officer in Finland asked me to take up this task, so I agreed to this (KU).
In the pilot implementation pilot project the local leadership also communicated the importance of the project. According to the informant they were also visibly active in the project.

The local leadership played an important role in the implementation. They communicated strongly the message that this has to succeed. The senior management of Wärtsilä Finland was involved, engaged and active in this project (RMR).

The local top-level managers visibly promoted the project, and supported all employees who worked for the pilot implementation project.

Everyone who worked in the pilot had full management commitment to back them. The top-level managers visibly pushed this project. At least in Services Finland this worked quite well (RM).

Also the local rollout manager’s attitude and supportiveness is noted to have had an impact on the pilot implementation project’s success.

Of course it had a big impact, that my manager was leading this (local rollout) project, that he was always willing to listen and we could talk about things as they were in our own language, and I could always express my opinions freely. This supportiveness had a big impact on the project (KU).

The way the emerged issues were handled after the pilot go-live also reflects the commitment of project leaders and the entire project organization. As seen in 5.3.4 the organization picked on a certain determination to solve the issues. I believe this kind of determination cannot surface without the appropriate actions and example from the leadership.

5.6.2. Management support

Support and commitment from managers on all levels of the functional organization is something that must be gained from the very beginning. Section 5.6.5 shows that the managers were responsible for analyzing the role changes for their subordinates. As the managers are ultimately direct representatives of the company to their subordinates, their attitudes and behaviors should be aligned to promote the change.

Management commitment must be established in from the beginning of the project.

Management commitment must be established in the beginning of the project, when the vision and urgency are created as well (CM).

In the pilot implementation project, the importance of strong management support within the functional organization was communicated before the rollout project. Exhibiting management commitment was practically required from the functional organization’s line managers. The managers received training about change reactions and what actions were expected from them.

During the Preparation & Blueprint stages we had trainings and info sessions, where the whole project organization emphasized that there must be strong management support from the functional organization’s side, so that the project would be as successful as possible. The project team told us, that managers at all levels should be visibly engaged in the project planning, and management should continuously push this project. “We need this, we will do this, and everyone must support this.” So this was communicated and told, and on some level demanded that the management must exhibit commitment in all ways (RM).

From the global project’s perspective, the training manager calls for more commitment from the line managers. However, top management commitment brought any wandering managers back in line.
This could have been more in focus. The line managers could have been more committed. Some line managers were beating about the bush and trying to avoid these new changes. Then again the top management was driving the change, so they run out of opportunities to avoid it (TM).

5.6.3. Need for change

In the informants’ view need for change is important for the implementation project success. The need for change was easy to justify, at least in those subsidiaries, where the systems were already reaching their limits of capacity and performance.

Need for change was quite clear in this project, there were simply so many old systems that many subsidiaries would have needed to change them anyway (TM).

In the pilot implementation project many users could see that it would not be possible to continue with the old system and old processes.

In our case the need for change was perhaps not clear to everyone, but at least to some. The users could concretely see, that we could not continue very long with the old system and old processes. It was evident that the old system’s performance was becoming a constraint in certain processes, so there was some understanding in the organization that something would need to be done (RM).

We had a working, well-adapted system, which had become quite adapted into our business. Many users appreciated the system a lot, but the user interface was visibly old-fashioned. And we were starting to reach the limits of system capacity. The need for change was present, but perhaps not so clearly (RMR).

Perceiving the need to change diminished the change resistance, and even there was a desire to get something better within the organization.

We did not have resistance to change as such. The old system was already 10-15 years old. Many perceived it to be outdated and were wishing it would be replaced with something better. So the understanding and will to implement something better was there (RMR).

The clarity of the need for change helped communicating and understanding it.

The reason for change was so clear, that it was easy to communicate and understand. At least my group of end users understood and accepted it (KU).

The communication of the need for change is yet another matter. The organization must understand, what is to be done and why (see also project manager’s remark in 3.2.7). The story should be so compelling, that a burning urgency is created. Sense of urgency may translate change acceptance into action.

The owner’s first thing is to insert the urgency into the organization, that what is now the emergency that we must make such a tremendous effort and put so much money into it. Business case is one driver, but there need to be other drivers too. If they don’t exist, they need to be invented. When you go through that story, everyone must catch the feeling, that dang there’s no time for waiting; we must get started right away (CM).

Need for change was also communicated to the end users through the trainings.

We included the need for change to our process education also, about what would change locally (TM).
5.6.4. Participation

Participation and involvement are seen as vital ingredients to overcome change resistance, and to create commitment and motivation. This is not the only factor however, as participation is also crucial for developing the actual solution and the competence to use it.

Various types of participation were presented in the interviews. Some part of the participation is necessary as input for the project (e.g. in business process definition, system testing and validation). Some participation comes from the recruitment of the rollout project organization, some from competence management and creation (e.g. key user concept and training procedures), and some from involving the managers.

The division between these types of participation is rhetorical in nature. In reality participation in the project organization cannot be fully separated from giving input to the solution, as there is a point where these two overlap. Also, the creation of competence and gaining manager commitment by involving them belongs into area of participation only to a certain degree. This distinction is made in order to be able to discuss the phenomenon in more detail.

Involving business into the project

The overall aim was to involve the business to the project as much as possible.

The business participated as much as possible, in the planning of the solution and rollouts (PM).

One aspect was the involvement of people into the project organization and decision-making across countries.

The project team took members from all the subsidiaries (TM).

The preparation phases included a number of people, around 150 according to the change manager.

The business case phase was a small project of its own. There we did the work with a 10 person’s core team, and then there were a couple of workshops, where there were about 30 people more. Then in the process definition phase, there were quite a few reference teams. We specified 20 key processes, and had one representative from all of them. Surely there were at least 150 people involved (CM).

The steering committee had representatives of all large subsidiaries. This participation was seen as a form of communication as well.

We had quite a large steering committee with almost 20 people at some point. Each large subsidiary had its own representative in the steering group. The participation and receiving all the materials and presentations is one form of communication (CM).

The change manager considers the preparation phase, and then the initiation of the rollout projects the most important points of participation.

Participation is particularly important in the actual rollout project initiation, solution building and validation (CM).

Participation in building the solution

The business participation was really active in the development of the system. The project
manager’s account reflects the notion that people really wanted to make the system work. The development phase took place conjunct to the pilot implementation project.

Our company culture is such, that there are a lot of doers. If there is a problem somewhere, someone fixes it immediately. There is not so much structure or hierarchy always. People will tell if something is not working, you don’t need to fear lack of feedback. Business was really active in the development of this system (PM).

The business participation was of utmost importance, to get the right match between the solution and the business.

It was absolutely necessary that people from business were involved as well. SAP expertise alone would not have been sufficient (KU).

The Finnish subsidiary participated quite intensely in system testing and development. Active participation also helped in creating the awareness of the project.

In Finland we participated quite intensively in system testing & development (RM).

After all, we did have the preparation phase and business blueprint here in Finland, so the organization was quite aware of the existence of this project, and participated quite actively in defining the Way of Working (RM).

In the process development phase the process ownership structure crossed divisions and countries, bringing in another layer of participation.

We had the process owners above divisional level, a global corporate process owner, and then the local process owner (RM).

In the pilot implementation project key users significantly participated in creating the solution, particularly in ensuring a good match between the business and the solution.

On practical level our goal was to create sensible processes. Every time if I felt some solution would become more tedious than it had previously been, I took the topic up with RM. Of course every point were there were alleviations to our work, it was a nice bonus. The system was new and needed to be learnt first, but I don’t think it became more tedious. Just a little different (KU).

All in all, the key user concept was an important occurrence of Participation success factor. The key users participation impacted the solution quality, business-solution match and competence building. The key user participation also had a motivational impact for key users themselves, which must have promoted their personal system acceptance. Considering that key users represented approximately 10% of company personnel, and the rest of the organization was assigned as their end users, their motivation and success in the key user role must have considerably improved the chances of a successful implementation.

Participation contributed to motivation

The practical experience from the pilot implementation project is that those who participated in the development and testing phases were motivated. Of course in this the proving of the cause and effect is not so straightforward, as the participation was selective and voluntary to some degree. Perhaps more motivated employees became more involved in the work as well.

According to the rollout manager from the pilot implementation project, the key users were motivated by the challenge of giving meaningful, creative input to the project.
Key users became motivated because they were able to be in the project and create something new. However, for the ordinary users it was a little so-so. The 30-40 key users were quite motivated; they were immersed in a creative environment, testing the new system setups (RM).

The key user attributes her motivation to interesting challenges brought by the new role.

It was motivating for me to get this key user role, after all I have been working for this company for 30 years now. So it was a good time to take up new challenges. It has been quite interesting. That is why I have wanted to continue in this role as well, it is always challenging (KU).

Involving people in the change is crucial, to avoid change resistance. This requires conscious effort, in listening, communicating, and investing time so that people become involved.

People don’t oppose the change as such, but they don’t want to be passive targets of a change. The key is to make people involved in the change. You need to be humble and listen, communicate, and invest time so that people become involved. If everything is given by force and directives, surely this “change resistance” will emerge (CM).

Being loud and opinionated was also considered a sign to involve someone into the project, as this person was likely to be interested and have ideas.

To aid the acceptance and commitment, we included the critical, strong personalities into the project organization. A loud, opinionated manager would become the local project manager. This approach was well received. If someone expresses opinions, he is interested, has ideas and something to give (CM).

The high degree of change impact on certain stakeholders, in this case the controllers, coincided with that they were always selected to be the local roll-in managers. There were other benefits as well, starting from their professional abilities, knowledge of the company and responsibility of the correctness of the financial balances.

The controllers underwent perhaps the biggest change. In a decentralized environment two people have the overview of how everything works in the company: the financial manager and IT manager. Now with the global ERP, which they do not understand, there is no more overview, just modules. Therefore by default, the local financial manager was always made the local roll-in manager. The controllers generally have a good profile for this role as well, they have a structured approach, have the right credibility to drive the change, and know everything about the company in question. Also at the end, all the changes in the system affect the balance sheet. The old balance is migrated into the new system and re-opened. The controller is directly responsible for its correctness (CM).

5.6.5. Defining roles

The informants view Defining roles as a crucial ingredient for project organization, and a necessary component of business process definition. However, the informants do not consider it that important for successful change management.

The project organization needs to be defined properly from the beginning of the project.

It was very important to define the project organization properly from the very beginning (TM).

Another aspect of this success factor is the definition of roles in the process definition phase. The basic functional roles are still present in the company. The business process definition phase was laborious though. The informant views role definition important for process design phase, but not so for the actual implementation.
We still have those who manufacture, invoice, ship, and so on. It was quite laborious to define what really belongs to a warehouse worker’s or manager’s roles. This gave us insight to what should happen in different transactions, and how the authorizations should work. This might be a significant factor in process design, but perhaps not so for the implementation (RMR).

Clear role definition is required from the transition point of view. Each user needs to know how their role changes at the go-live.

The business blueprint defines the roles and processes quite precisely. Of course the challenge was the transition, between what you are today and what you are tomorrow. The line managers were responsible for analyzing the change that each role would undergo (RM).

At some functions (in this case Services Finland invoicing) the roles did not undergo any changes.

Our roles did not exactly change in anyway. In invoicing we just continued like we had been doing. Of course for my part I got this key user role, and I put about half of my work time to that. Perhaps there were more changes in other departments, but in invoicing it stayed quite the same (KU).

Considering the changes in resource needs (see 5.5.1), there must have been significant changes in some person’s roles. These experiences or how they were dealt with from change management’s point of view were not covered in the interviews.

5.6.6. Planning

Planning, goal setting and control are perhaps more project management oriented than the other success factors. Also, they are interconnected, in the sense, that plans must cohere with the goals, and both progress of plans and attainment of the goals need to be controlled.

Specifically defined sprints were used throughout the global project. Intermediary targets must be planned, because of project size. The intermediary targets must also be aligned with the overall goals.

In a global ERP-project we have the challenge, that the end goal is too distant from human perspective, you got 2-3 Christmases in between. You must break it down to smaller sprints; give intermediary targets, but always so that the same overall goal remains (CM).

Specific action plans are the main occurrences of this success factor. The learning, the development of more detailed, purposeful and realistic plans for the subsequent rollouts is also present.

Action plans with assigned responsibility and due dates

The pilot implementation project was governed by utilizing specific action plans and checklists. The checklists are discussed in more detail in the section on Control, 5.6.8. Evidently the checklists must match the project plans and be coordinated so that they are available in the due project phase.

We always had specific action plans in place, who would do what and when. On the local level, the master data, conversions and clean ups was laborious, so it was absolutely a critical success factor what would be done and when, and that they would be done (RMR).

The planning is closely linked to communication, as whatever plans are in place, they need to be communicated to those who actually need to take the actions in a timely manner.
For operational tasks we need to have the information in a timely manner, so that we have the time to prepare for these tasks and execute them appropriately. If something is planned it has to be communicated (RMR).

Even if the plan is good, lacks in communication can hinder its effective execution. Probably any means of verifying that the plan has been understood should be used.

At times we were taken by surprise, as some thing came at a fast pace to us. The plan was probably good, but sometimes it was not communicated so well (RMR).

**Considerations regarding the planning**

From the pilot implementation projects’ point of view, the go-live is the biggest item in planning. The plans should take the human resource component into account, for instance in the timing of the trainings.

The biggest item for planning was the cutover, which was planned to the millimeter, and which we tested as well. We were perhaps a little aggressive in it, but we did want to get the business rolling again (RM).

And then there are practical considerations as well, like what kind of training is needed for which task, and not to put the trainings in the middle of the holiday season. The system go-live was originally planned for Fall 2003. The trainings would start just before the Summer holidays, and after the Summer holidays we would take the system into use... After the users would have forgotten everything they had learned before the holidays. Well this got fixed in that sense, that the go-live was rescheduled partly because the system was not ready, and the master data preparations were not ready either. So this way we got more time for the trainings as well (RMR).

From key user’s perspective the pilot implementation project proceeded as planned.

Of course planning is important. Things proceeded as planned, and there were no surprises as such (KU).

The global project team learned and improved their approach between the rollouts. This reflected at least on the planning and execution of the trainings and change management in general.

For the Finnish rollout we did not have all these activities and phases ready yet. Some things we learned only later. But most of it was there already. Then in different implementations we have taken into account cultural matters, the size of the company, legacy systems, as all of them impact the benefits and risks related to a particular company (TM).

This kind of learning between the rollouts took place also with regard to the KPI metrics to be used before and after for the other subsidiaries go-lives.

### 5.6.7. Goal setting

Goal setting is important in setting the direction for the change, and aligning the project sprints and scope to the overall goal. There must be a shared goal to steer the direction of efforts. The scope control and attainable project sprints need to be aligned to the same. In the context of this implementation project, he goals were more or less given. The functional organization needed to accept them as they were. On the other hand, the global goals or their obtainment may not be concrete or visible on the local level.

**Establish a shared goal to steer the direction**

The goals need to be clear from the very beginning.
This is the guiding star for the entire project, and it’s important from the very beginning (TM).

The business case and the dates were created in the beginning of the global project. The goals need to be repeated in all communication, so that the project organization does not lose sight of the final goal.

We created the goals in the beginning of the project, the business case and dates, all this needs to be repeated in all communication, so that it really sits, and everyone who is working for the project remembers that this is the final goal (CM).

This is particularly important, since the goals must guide the solution building efforts as well, so that the solution scope is aligned to the overall goals.

One can get sidetracked so easily, if the goal is not clear in mind. If you repeat something sufficiently, everyone will believe it. We had to keep the goals in mind even in validation period. There was bit of anxiety in air, if the system would really be good enough. And then the perfectionists would start to hone and polish. You need to have guts to say that enough of this, let’s go (CM).

Another aspect of the communication of the goals is that people understand the goal in the same way and commit to it, i.e. it becomes a shared goal.

The aim is always that everyone shares the same goals. When we communicate some matter, everyone understands it in their own way, puts it in their own context. Unless we make effort to ensure that everybody really shares the same goal, we end up in the woods. You need to repeat the same message. If you repeat it sufficiently, it sits (CM).

**Pilot project goals given**

From the pilot implementation project’s viewpoint the goals were more or less given, without much room for negotiation.

The goal setting did not play that big a role in Services Finland’s rollout. The general idea was that now we are implementing an ERP system, and in the long run, we get synergistic benefits. End of story (RM).

The goal setting was done on the global level, and sometimes they could not be achieved practically, as is also seen in the section on Planning, 3.2.7.

A lot of goal setting was done on the global level. Some part of that were just imaginary things that could not be achieved. Then there were concrete goals that could be achieved (RMR).

The main goal on the local level, for the pilot implementation project, was the go-live date.

For this project it was crystal clear that we would save money thanks to more efficient system and processes. On the local level seeing this goal was more challenging. In our case, the company had clear financial objectives for the project. But on the local level we only had the go-live date. The concrete benefits of this implementation were not visible in the functional organization (RMR).

The global level objectives were communicated to the local project team in the pilot implementation project. The savings have not become noticeable or visible on the local level, even though they were achieved.

Of course we knew about the objectives on the global level. But on local level it is hard to see whether we achieved savings or not. Perhaps from a higher level it can be estimated how much savings we have reached, but it has not been communicated very widely to the organization. We don’t know what kind of improvement we
have had in the performance. On the other hand, nobody really questions the benefits of the implementation. Of course we see the general trend in business, how are we doing, but it is hard to analyze the background factors (RMR).

The awareness of the goals on the end user level is not visible in the interview material.

5.6.8. Control

Several types of control emerged in the interviews: scope control, checklists for the sprints, measuring the overall “feeling”, measuring project progress, measuring the performance before and after go-live. This list reflects the importance of control for the attainment of the project goals. However, many of these points are clearly included in any standard project management approach as well.

Perhaps the scope control, use of checklists and sprints, and measuring of the overall “feeling” are particularly important in ERP implementation since it is inherently an enormous and challenging project. Performance measurement before and after the go-live is important due to the business criticality of the system, and the cutover nature of the transition. Key Performance Indicator (KPI) reports give the idea of in what state the business performance is before and after the go-live, and should reveal problematic areas.

Measuring the success of change management efforts is one aspect of control that directly relates to change management. It is also a form of two-way communication, which communicates the importance of the project’s success and gathers feedback on the organizational readiness and improvement suggestions for the change process.

One may argue, that control has several aspects that are particularly important in an ERP implementation, even though it is always not clear whether they should to be attributed to the scope of change management, project management, or both.

Scope control

The informants revealed one important mechanism of project management, namely control of scope. Scope control was practiced throughout the global project.

In practice there must be some criteria for evaluating if a phase has been completed, and a mechanism of freezing it. Changes could be made only through the change request process, and high-level approvals were required.

Checklists for the sprints

The project execution phases were projected so that there were so called sprints: e.g. intermediary targets, with clearly specified deliverables. These were communicated to the local rollout teams and checklists were used to control their attainment.
In the project execution phase we had defined sprints, and for each sprint we had defined very clearly the things that need to be delivered after the sprint. We gave a checklist: check, check, done, done (CM).

As a success factor Control particularly contributed to the attainment of the goals. This corresponds with the view that without solid project management practices even the best change management practices cannot give results. The importance of Control was clear also from the local rollout team’s point of view in the pilot implementation project.

Control has a big impact, even if one does not actively think about it in such a way. Without control we could not have reached the goals (RMR).

**Measuring the overall “feeling” of the project team**

Throughout the global project, there was a feedback system in place, to measure the overall “feeling” within the project organization. Low scores often corresponded with problems in keeping the schedule.

Then we had the Dr. Feelgood index. This was to measure the feeling: How are we doing? Generally it worked quite well, because it gives indication to the project management about what is coming up around the bend. If a team is very stressed out, works long days, faces setbacks after another, the whole effort feels painful, Dr. Feelgood is low as well. In this case we are most likely behind the schedule, since either people don’t understand what they need to do, or lack the resources. You need to trust this feeling, because the feeling is always right (CM).

This is a management system. We had a feedback system in place for how we were feeling (TM).

From the pilot implementation project’s perspective, in many cases the “how we feel” type of measurement could be considered sufficient.

We had a pretty good reporting model inside the project. It was not necessarily always so concrete or objective, it was more like “how we feel”. In many cases it may be absolutely sufficient, as long as one gives an honest estimate (RMR).

**Concrete metrics for project progress**

In a big, tiered project organization, it is probably even more important to have concrete metrics that indicate the project progress at one glance. A dashboard was in use to give indication on whether the project was going in the right direction.

There has to be some dashboard so that we know we are going in the right direction (CM).

The concrete metrics in the pilot implementation project included metrics on training, data cleanups and conversions, and on process performance.

We had some concrete metrics as well, such as how many end users had been trained, how much training had they received, what is the level of completion for cleaning, converting and checking the master data, how the processes would work and so on. Sometimes we had to pull these things from the sleeve (RMR).

The control mechanisms also enabled the pilot implementation project team members to realize that the initial schedule would not work, and render the required corrections.

The metrics and control mechanisms enabled us to see very early on, that the first schedule was too tight. The risk
for failure was too great. We were able to thesis on this, and notice that this will not work, and change the framework and schedule (RMR).

**Key Performance Indicator (KPI) metrics for performance before go-live and after go-live**

Due to the business criticality of the system, and the cutover nature of the go-live, Key Performance Indicators (KPI) were also in place, to monitor the go-live impact on the business performance.

The important question of course after go-live is if the business is on the same level as before, or has productivity dropped. For instance, with sales orders, you can measure their amount per week, or per day. We had metrics in place for this, how it was before go-live, and how it was after go-live (TM).

The pain caused by flawed KPI reports was sharply felt in the pilot implementation project, as seen in 5.3.3.

The reports we had in use at that time were quite few and had flaws. It was very difficult to monitor the organizational performance with them, so in practical terms we had no performance indicators in place after the go-live, to let us know how everything was working - or whether it was working (RMR).

After the pilot go-live, and the input from the high-end consultants, a relevant set of KPI reports was built, so it could be used in the remaining rollouts.

You need to have enough metrics in place to see if business is running okay, and what it is pending on. If there are not enough KPIs or all are showing green, you don’t know where to look at. We built the right set of metrics after we could catch the root-causes (PM).

More than anything, the selected KPIs need to be relevant. The KPI reports need to give information on whether the processes are working as expected. They also need to give indication on the root-causes of the problem - where to look at, if everything is not in order.

**Measuring organizational readiness and change management success**

Two ways of measuring the overall organizational readiness, and evaluating the process and success of the change management efforts emerged: Observation i.e. subjective evaluation, and the use of surveys.

The actual measurement of change management success is quite challenging. Observation and reporting were the tools for analyzing and communicating how the organization was receiving the change and the new system.

Measuring the change management absolute is quite challenging, you can’t really set concrete metrics for this. We did have plenty of reporting to the management (TM).

We tried to observe how the organization was receiving the change and the new system, and there we went pretty much by the feeling (RMR).

Hirvonen (2004, 96-97) created a survey for the pilot project, which measured employees’ attitudes towards the implementation and the system, and their assessment regarding the project personnel and senior management’s behaviors, communication and the change process itself. The survey asked for constructive feedback to improve the change management approach, and increase the chances of a successful implementation from that employee’s perspective. The survey itself can be
considered a form of communication to the employees, as it covered several aspects of the implementation. The mere act of setting up such a survey, together with reporting and acting upon the results communicates commitment to the project from the project organization’s side.

5.6.9. Training

All in all, the informants placed high importance on the training. Three types of training occurred in the interviews: 1) Training the line managers, 2) training the key users, and 3) training the end users. As people change positions and system changes are introduced, the training still continues to ensure the personnel know how to do things in the right way. This section applies to the entire global project and organization, unless specified otherwise.

A successful implementation of new processes and the new system requires training, so that people actually know what to do with the system after the go-live. The training also helps to anchor the change. At least in the pilot implementation the training system seemed to work quite well.

Training is extremely important in the deployment phase. “Make change stick”. Because the force of nature will always draw it back to the original state (CM).

Of course the personnel needs to be trained, so that they know how to do the things in the right way. The training can be arranged in different ways however (TM).

The training was absolutely necessary. There are many who perceive they did not get enough training, or any training at all, but all in all, the training system we used was quite good (RMR).

At least in the pilot implementation project, the managers were trained about change management, about the potential reactions to change, and about how they should communicate about the changes.

We had trainings targeted to the line managers held by change management consultants, where we tried to create the knowledge regarding what kind of reactions the end users may display, and how important it is to communicate about the changes. We also had a change management consultant as a member of the global project team (RM).

The key users were trained by the senior experts (system consultants). It was key users’ responsibility to train the end users. To do this, the key users needed to master both the system and the process.

The senior experts trained the key users about the new processes. And then the key users trained the end users (TM).

The key users needed to master both the system and the process (RM).

The actual end user trainings took place through several channels. There were in-class trainings, and e-trainings available to give basic and formalized information on the system and new processes. Also, the key users played a significant role in teaching the new processes and how to use the system on the practical level, in interaction with their end users. The process training was generally given before participating in the application training. There was an e-learning material available to be learnt before coming to in-class training.

We had short info session overviews regarding the process, and then hands-on class training regarding the application. We did not want anyone to go to application training without knowing the process, the new way of working. We also thought that covering both of these at the same time would be too much. In 2003 we rolled out the e-learning on basic SAP functionality, such as navigation. The process and basic navigation must be mastered.
In the pilot implementation project the end users were trained about the process and the system in the same training.

The end user trainings always included both the process and the system. It worked quite well, maybe not a 100% success, but it worked. More we had discussion on who would train and what (RM).

The training program was formally organized and managed. In the pilot implementation project, the end users received an average of 3 training days.

In Finland we had 2400 users to be trained, and about 3 training days for each. The senior expert or training manager would give the training. The training program was based on linking the position to the process and the tasks, and also to the system. In a smaller company one person would take care of several processes. So several trainings would be needed. We also have a learning management system in place, so we know who has attended which course (TM).

The aim was to standardize and reuse the training materials as much as possible.

We sought to standardize the trainings as much as possible. The objective was that the material used in key user trainings could be used in the end user trainings as well (TM).

The key users share the way of working, guidelines, system changes, and introduction to new employees. It depends a little bit whether they are part time, or full time. About 50% of the time during the first year, and 25% after this. There are those who are full-time key users, and those who do almost nothing related to being a key user (TM).

The interviewed key user was active in making detailed instructions to the end users, regarding the use of system. She also started the go-live day by going through the tasks with each end user individually.

At the go-live I made detailed instructions to the end users, about what the system looks like, with print screens and everything, and wrote what needs to be done in which situation, and sent those to the end users. When the go-live day came, I sat next to each one, that the first invoice and shipment document would be made with me. This was safer for the end user, and at the same time I saw their level of competence, and could evaluate the need for more training (KU).

The system and process related training still continues throughout the organization, as people change positions and system changes are introduced. The training organization and key user function are the formal means of providing this training.

Even after the implementation training is required, people change positions, there are new ones, so we created this training organization (part of IM) and key user club. Even though the project is over, we must continue this in a global, coordinated, harmonized manner. This may be quite unique even among Finnish companies; I think normally every subsidiary needs to manage by themselves. This aspect of competence management enables us to be efficient and operate in a sensible way (TM).

Even today, the key users are trained on a yearly basis.

We still have about 40 yearly trainings for the key users (TM).

Training is vitally important, at it is still continuing (KU).
5.6.10. Communication

The importance of communication for the implementation success is emphasized by all of the informants.

The interview material shows, that several success factors depend on the quality and quantity of communication. The ‘need for change’ and ‘management commitment’ need to be communicated. The plans and goals need to be communicated in a timely manner. Important feedback can be gathered from the organization regarding their readiness for the transition. Any lacks in communication can undermine otherwise good plans.

Communication is also seen as a means of gaining commitment, preparing the users for the transition, rumor prevention, and enforcing the impression, that this change is really happening, and that it is a positive thing.

High levels of communication throughout the project & organization

Levels of communication were kept high throughout the entire global project. Essentially the understanding of goals, plans and the need for change must to be established in the organization through communication. The project management states that there is no such thing as over-communication, indicating that the matter was taken seriously throughout the project.

The communication and informing is really important. Where we are going now, why... There is no such thing as over-communication. To get the counterpart understand what we are doing and why, that is the tough part. We did invest quite a lot of time into this (PM).

Giving plenty of information may give the positive impression to the recipient, that he considered important and his comments are valued. The change manager views effective communication as systematic stakeholder management.

Our approach was systematic stakeholder management from the very beginning, by the book. Many times they received information even though we did not have that many new things to say. But people don’t really react to receiving too many mails or seeing some executive summary again. Perhaps it creates a positive perception that these ERP people think that it is important that I see this thesis, and give my comments (CM).

The high level of communication was reflected on the pilot implementation project’s level. The communication was also carried out through designated responsibility. Training can be seen as one form of communication.

We had quite a high level of continuous communication. Then we had the change management trainings. Also in the rollout team we had assigned responsibility of communications to a team member. We got all the information we needed (RM).

In change manager’s view communication actually ties all the other factors together.

Communication is like glue that is always flowing in the background. It ties all the other factors together (CM).

Communication’s role in preparing the organization for the transition
Communication was used effectively as a means of preparing the organization for the transition. Proper use of communication increases the appropriate knowledge of the change, prevents rumors from spreading and increases the organizational confidence regarding the change.

People need to get as much information as possible regarding the change. If any vacuum is left, it will be filled with rumors.

The worst situation in change is that if people notice that something is going on, but do not receive information regarding it. There is no such a thing as information vacuum. Unless we fill it, it is filled with rumors and other BS. And at that point, many times greater effort is required to weed those rumors out (CM).

The content of communication needs to be considered according to the stakeholder group.

Communication is a crucially important part of change management. If there is no communication, rumors will spread. Of course different stakeholders need to be communicated slightly different things. I don’t remember exactly what the stakeholder grouping was, but managers, key users, end users, could be a good way of doing it (TM).

In the beginning of the pilot implementation project, as much information as possible was given on the change and the progress to the users. This practice ensures the availability of the correct information, and the positive messages of the progress are likely to increase the confidence in the change realization.

Especially in the beginning, we tried to keep the organization updated about the changes all the time. We tried to give positive messages to the users all the time that something is happening, even if there was not so much progress at the time (RMR).

Key users were both targets and sources of communication. Specific information sessions were targeted to them. The interviewed key user volunteered to send additional communications to her end users.

We had a big open office where info sessions were also held. I had the practice of sending a weekly update out to my end users, to communicate about the progress, what could be told at that time (KU).

Continuous email communication and face-to-face conversation helped the end users prepare for the transition. This way the knowledge about the system was built up step by step. The overall end user confidence regarding their change survival was probably better in this case than it would have otherwise been.

The change came little by little; I kept sending mails continuously to my end users. I did not spend 100% in the other place, and each time I got back here I always tried to tell something new, what there would be to tell. So I believe for my end users this worked quite well, that the change came step by step, compared to somewhere else, where the whole package came to everyone at once (KU).

In key user’s experience, communication with the end users seemed to ease the reactions. It is also possible that the reactions to change were somewhat milder in this division than in the other divisions.

The people are so different, so the reactions varied as well. As I was able to communicate with my end users, it was not so intense. In my department the implementation had no real impact on sick leaves. Also nobody left this organization because of it. Elsewhere there were some burnout cases though (KU).
5.6.11. Motivation

The informants’ did not see motivation as a separate activity. In informants view it needs to be created through other activities, such as communication, involvement, need for change, and positive overall spirit. Some effort was put into activating and motivating the key users, other than that there were no solely motivational activities. The fact that motivational efforts were not used to that great degree probably contributes to the informants’ views on this factor. The same fact could also reflect the lesser impact of motivational activities to implementation success.

Motivation mainly attributed to other factors

The informants view motivation to be a product of other factors. Motivation is mentioned as something difficult to measure, and mostly attributable to a positive atmosphere in the organization even at the face of challenges. The rollout manager’s right hand considered the atmosphere of the pilot implementation project to be quite positive.

Motivation is very difficult to measure. I think as long as we can maintain a positive spirit in the organization, among the end users and so on, everything will go well. There were some dark moments, hopelessness around the go-live, but then the spirit came that we will get through this together. There was quite a positive atmosphere throughout the project, so we did not really need to make effort to make changes to it (RMR).

In change manager’s view motivation depends mostly on the change approach. The way to create motivation is communication and involvement.

Motivation is begotten more by the approach than anything. If a person is communicated to, and if the person is involved, he is motivated (CM).

Motivational packages were not used in this project. Communication and need for change were the main means of infusing motivation into the organization.

We did not have actual motivation packages as such. Primarily we just offer the information about where we are going. Need for change could be a motivating factor as well. If we don’t do this, we will not survive in the competition. It could motivate people, that if we don’t do this, we may not be in the marketplace anymore in the future (TM).

Motivational efforts for the key users

The key users were generally quite motivated and committed to their task. Some motivational activities were arranged for the key users to keep them active and motivated. Other than that, there were no motivational efforts.

The intention to increase motivation through communication was there. However, the message given to the organization regarding the project goals and objectives was quite directive, in the pilot implementation project and probably subsequent rollouts as well (see 5.6.7).

The informant suggests that the Finnish culture is such that Finns simply do what they are told to do. This kind of cultural feature would naturally reduce the need for additional motivational efforts.

We tried to keep the key users active and motivated. We arranged some events for the key users, where we also had motivational aspects to keep the spirit high. Of course we tried to increase motivation through communication as well. But if we think about the whole organization, for the most part our message was that this will be done now, and it has to succeed. Finns believe quite well what they are told, and then just do it (RMR).
The seemingly low importance of motivational activities for the implementation success may depend on several things. One could be the company culture. If the company culture is change oriented in the sense, that people are motivated by challenges, and there is a will to achieve things together, as Wärtsilä’s culture seems to be (see 5.1 for further reference), motivational efforts may not be needed in the same degree. The informants’ views and the information disclosed by the company regarding matters of the organizational culture support this hypothesis.

Also, if the change reasons are properly communicated and seem justified and the organization is given the support and means to succeed in the change, then that may very well suffice in creating the motivation. This also matches with Holt & al (2007) concepts for attaining change readiness. This would then imply, that the motivational activities were not considered important, because they were not necessary due to good change management practices.

One more factor affecting the low importance of this factor could be the fact, that ERP implementation is a highly specified, planned and mandated change by nature. The users may resist the change, but they cannot negotiate it. This might imply that motivational activities as means of persuasion might not have so much impact for change acceptance if the basic motivation to make the transition a success if not there.

Perhaps motivational efforts are quite a superficial way to try to make this radical and pervasive a change to happen, and it is more important what happens on the day-to-day basis in the project, how it is communicated, and how people are involved into the project. Motivational efforts were used even in this project, but may be considered more as an optional seasoning rather than a main ingredient for ERP implementation success.

5.6.12. Relative importance of the change management success factors

The aim of the study is to reveal the usefulness of Salminen’s model in ERP implementation context, and improve its fit whenever possible. In this setting, discussion on the relative importance of the success factors becomes very meaningful. The definite order of importance cannot be established based on this material alone. Whether that is even a relevant question is another matter of consideration.

Several factors that in informants’ view affected the reactions to change favorably were presented in the interviews. These were communication; focus on change management, need for change, and sense of urgency, participation and awareness of the project. These correspond with the aspects of building change readiness, e.g. knowledge, skill and motivation. Business growth also aided the acceptance of the project, as it suppressed the need for layoffs.

Change manager remarked that different success factors have different importance in different stages of the project. This corresponds with the literature as well, for instance, as seen in Hawking et al (2005).

These are actually important in different stages. In the beginning you need to have the right resources and create the winning team. There are three things that tie the project phases together. Goals, control and validation - what is it that are we getting - and communication (CM).

Rollout manager’s right hand also concluded that all the factors play a role. Personally I agree with this viewpoint.

Obviously all these factors play a role (RMR).
On the other hand, the interaction between the success factors, and their total impact are an important question, as almost all the informants denote the importance of a holistic approach.

It is difficult to denote if something went well or not, it was the totality of things that made the difference. The top management was actively engaged in the project, the participation, and that key users and end users also partook in the problem solving, and we communicated appropriately (RMR).

Regarding which success factors could be more important than others, Leadership, Management support, Need for change, Participation, Training and Communication received the greatest number of individual votes from the informants. The more project management oriented success factors, especially: Planning, Goal setting and Control were viewed as important, but divide opinions, as some informants don’t consider them to be success factors for change management.

The only success factors that receive lesser attention in the interview material were Defining roles and Motivation.

The informants view Defining roles as a very specific action for the initiation of the project organization, and on the other hand a necessary step in the process definition. There are many other necessary steps in ERP implementation as well that could be included into the list with the same criteria, so perhaps this is not so critical from change management’s point of view.

The informants do not view Motivation as a standalone success factor, but more of a product of proper application of the other success factors. This could be due to the nature of the ERP implementation, that the change involved is not really voluntary or negotiable from the end user’s perspective. Motivational efforts were utilized to some degree with the key users though.

5.7. Conclusion of the empirical part

5.7.1. Summary of findings per change management success factor

The findings from the interviews are summarized Table 7 per success factor.
<table>
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<tr>
<th>SUCCESS FACTOR</th>
<th>FINDINGS FROM THE EMPIRICAL CASE</th>
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| 1. Leadership  | - Top management needs to promote and support the project, and act to solve any problems.  
- A clear distinction between project leadership, top management support and general managerial support must be made.  
- In a global project the organizational picture becomes more complex, affecting all project activities. |
| 2. Management support | - It is important to gain managerial support on all levels in the adopting organization.  
- The walk and talk of the managers affects the credibility and perceived legitimacy of the entire project.  
- Top management support required to get any stray managers in line. |
| 3. Need for change | - Sense of urgency and commitment to the change important throughout the organization, both before and after the go-live.  
- The story needs to be compelling, and repeated in all communications. |
| 4. Participation | - Not possible to involve the entire organization. Solution development and rollout projects fundamentally different, thus enabling different forms of participation.  
- Global process owner concept was used to enable global participation in the solution development phases. End users participated system testing. Steering group work and request for comments were also one form of participation.  
- Key user concept proved to be effective form of representational and influential participation, that contributed to business-system fit, preparing the end users in the transition by informing, supporting and building the required competence. |
| 5. Defining roles | - Important for the project organization, business process definition, and cutover planning.  
- Defining roles is related to communication and training, as awareness and learning of the new role is necessary. |
| 6. Planning | - The tiered project organization with tight top-down control and precise checklists, feedback mechanisms and plenty of interaction within the project organization seem to have worked quite well. There may not be room for flexibility in the actual rollout project.  
- Need for change management was recognized, and emphasized throughout the project. Major wins were utilized in the communication. Quick wins were not necessarily planned for.  
- Considering the length of the project, setting shorter sprints was found to be a good approach. Considering the number of global rollouts, the standardization of the approach became valuable. E.g. specified release schedule and training materials were utilized. The learning and improving the approach was also important. |
| 7. Goal setting | - The overall goal of system change and process harmonization was clear for this project.  
- In the actual rollout projects, the goals were more or less given. Short-term goals, “sprints”, with well specified schedules and deliverables were found to be a good approach. |
| 8. Control | - The control mechanisms and responsibilities in the tiered project organization seem to have been well defined and structured. The progress and status of the project was measured in several ways and from several perspectives.  
- Some examples: Dashboards of project progress were in use. The scope was protected especially closer to go-live in the pilot project. The “feeling” within the project organization was monitored on a regular basis. Observation and surveys were used to find out how the functional organization was receiving the change.  
- The KPIs need to measure the right things. Despite all the efforts the system-business fit and processes did not work as expected after the go-live.  
- Anchoring the change, making change stick is important for benefit realization. |
9. Training

- Training was used to educate different stakeholders regarding their role and what is required of them in the change.
- Both end users and key users received formal training. Key users also instructed them and gave hands-on support. Managers received training on change reactions and what was expected from them.
- Training system and materials were standardized as much as possible.

10. Communication

- Plans and objectives need to be communicated in a timely manner, both within the tiered project organization and to the different stakeholder groups.
- The larger the number of people affected by the change & participating in the change creation, the more valuable stakeholder management becomes.
- Trainings, participation and all forms of involvement can be seen as forms of communication, and should include the need for change.

11. Motivation

- The actual motivation may be best gained through the other factors. Participation, need for change and proving change success, are important sources of motivation.
- There were events arranged for key users, which had motivational aspects.
- Counseling and motivational packages may not be appropriate (or affordable) when the change impacts almost the entire workforce of the company.

Table 7 - Summary of findings from the interview per success factor

5.7.2. The interview material analyzed through Hannus’ model of strategic change

Hannus’ model of strategic change (Hannus 2004, 219) contains six domains of change: competence, values and culture, and commitment, as the intangible, people-related areas; and processes, information systems, and structure and management systems, as the more concrete areas of change. As the change management success factors should be means of attaining the change outcome, I will shortly reflect these against the domains of change.

Competence, commitment, processes and information systems were the most significant domains of change in the ERP implementation project, whether we look it from the pilot implementation project’s or the global project’s perspective. These conclusions extend quite naturally to the entire project.

Competence

The mastery of the new system and new processes were crucial organizational competences that had to be created during the project. The project team members and those who participated in building the solution had to develop new competencies as well. Change management competence had to be developed so that the organizational change could be managed effectively. Process development competence and process oriented thinking was required to create sensible business processes. Some learning took also place in the global project team with regard to developing the approach (e.g. in training arrangements, KPI reports).

Training, participation and communication were the success factors that affected the building of competence most. These are evidently ways that help to build skill, knowledge and motivation, i.e. the ingredients of change readiness.

Values and culture

It is not clear how the values and culture were changed in this implementation project or whether there was need to change those. The relatively limited evidence on the company culture tells a tale
of an informal organization, which is driven by challenge, where there is openness towards new ideas and people are eager to take initiative and fix problems. The characteristics of an organization’s culture depend on leadership. I hypothesize that this kind of culture is in fact open to change, but special attention is required to justify the change, to make the case clear enough. The employees will most likely do as they are told, but probably want to know the reasons why.

In Wärtsilä’s case the success factor that has probably affected the values and culture most is leadership, and from outside of this framework also company history. Their impact to the company culture however is not a result of this implementation project alone.

It may be that in ERP implementation context values and culture becomes an object of change, with a desired end product, only if the current values and culture are impeding the project success. Wärtsilä’s company culture may in fact have been an important enabling factor for the successful ERP implementation.

Commitment

It was necessary to gain strong commitment to the entire project, and also for each rollout from all levels of the respective organization. The leaders of the global project team understood this, and they put in considerable effort into creating this commitment within the project’s stakeholders. However, the commitment was not easy to gain, and resistance occurred on various levels of the organization.

According to the interviews, involving people (participation) and communicating to them had the most important effects on commitment. In the pilot implementation project the commitment may have risen also from the positive atmosphere of working, which may be attributed to leadership and management support, or the company culture as such. Additionally the clear need for change must have helped in this process.

Processes, Information systems, and Structure and management systems

All of the business processes underwent changes. The most important change management success factor for this matter in my view was participation, because it produced the necessary input for creating a new sensible way of working that would fit the business.

The ERP system is arguably the most important company infrastructure system. In this global ERP implementation project all the separate ERP systems were replaced with a single implementation throughout the company.

Several structural changes became enabled after the global implementation project, as the project increased the organizational capability of managing operations globally. Automated financial consolidation would make the financial reporting less complex and induce transparency into the company. There may have been changes to Human Resource (HR) management practices enabled by the project. In fact I consider this more than likely, considering that a global HR platform is now in place. However the interview data does not cover this topic.

Considering the system-orientation of the ERP project, these domains are likely to be the main drivers for the goal setting, project planning and control. It is to be noted however, that communication, training and participation were also planned duly for and the results were controlled in the project.
5.7.3. Change management approach in the implementation project

Change management can be conducted in many ways. I argue, that the change management success factors may be either used productively, to further the change, or misused, so that the way they are applied actually makes it more difficult to attain the project objectives successfully. This is why the approach to change management needs to be analyzed more closely.

A general change management orientation characterized the practices of the pilot implementation project, and most likely the project in its entirety as well. From the interview material it is clear, that change management is not only a matter of deliverables, but also of the approach, the process of achieving the results. The informants quoted the inseparability of change management and project management, and the importance of the holistic approach for the successful implementation project.

As noted by the rollout manager’s right hand, there was specific focus on change management, and it was included in the project approach from early on. Also, the importance of change management was communicated throughout the project, as the training manager mentioned.

Integration & inseparability between change management and project management

One evident observation in the interviews is that the informants view change management as inseparable from project management. This view was particularly pronounced in the members of the global team. It seems that change management practices were interwoven into the process as one inseparable component of the implementation project.

We used the general categories of people, system and data to manage the project tasks. It became quite naturally when we looked into the types of entities involved in this project. Change management was required to help people understand what is happening, and in key & end user training. This kind of project actually brings into display all aspects of change management (PM).

Change management must be integrated to the project management, so that project management is actually part of change management.

Change management is part of project management, as it is the project that brings about the change into the system, organization and way of working. If project management is not part of change management, or if it is delegated to other people, consultants in the worst case, it will most likely fail (CM).

Or, to put it the other way round, change management should in fact be part of good project management.

In these studies they always seem to be looking for the key, but it is the whole picture that matters. I don’t believe in the existence of any single key. But the change management is really important. And largely change management is a question of good project management (PM).

In my opinion there is no contradiction between the two views. In this implementation project there was a mutual relationship between change management and project management. On one hand change management needs to be taken into account in all project tasks, so that even the matters that belong more to the traditional scope of project management are conducted in such a manner, that they facilitate successful change, by e.g. communicating with the stakeholders and involving them. On the other hand, even the more change management specific tasks must be included into the project management agenda.

Change management alone cannot deliver results. Good project management practices are also
needed. Also, change management people need to understand exactly what the project situation is, to know what needs to be communicated and who needs to be involved. This is why they need to be integrated in the project team.

If you have the best change management in the world, but bad project management, you get nothing done. It’s not a separate phenomenon (PM).

The change management people need to understand exactly what is about to be done in the project. That’s why it’s good that CM was a full-time member in the project team, so he would know what needs to be communicated, and who needs to be involved. It is the project manager’s responsibility to ensure that right people are in the team. It is teamwork at the end (PM).

All informants from the global team presented the selected and practiced change management approach as a key ingredient for this project’s success. The project manager also highlighted the importance of a holistic approach throughout the interview.

I think the real success factor was our holistic approach (PM).

The change management orientation originated from the interest and efforts of the change manager. Necessary buy-in and awareness of change management importance was achieved. The training manager indicated that change management is now practiced in everything they do.

I guess the basic premise in ERP implementations is that the change management is humanistic hogwash, which is not needed, and training is a good savings target as well. My role was to contrast and challenge these assumptions. Change management must be included in the project management agenda. I think it is wrong or a risk to consider change management separately. The project manager understood this and took it seriously (CM).

The change management’s share of the entire budget was very small according to the project manager. The interpretation of this information actually depends on the project manager’s definition of change management, and would perhaps need to be specified further. More interesting point in this remark is that all of the project organization had shared responsibility for change management. In practical terms this would ideally mean that this change management approach was utilized in all project tasks, whenever possible. This is another piece of evidence that change management practices were integrated with the other project management practices.

A very small share of overall project budget was reserved for change management. Every member of the project was responsible for change management.

Analyzing the project management’s perspective to change management, the case for change management in ERP implementation seems to originate from two factors: 1) the costs of failure cannot be tolerated, and 2) critical parts of project success correspond with organizational aspects of change readiness.

The thing with an ERP project is, that it’s so expensive, that unless you are certain that it will probably work, you cannot do it. There are companies that have failed, and then it takes ten years before they have the courage to try again (PM).

I don’t agree when some people say that SAP doesn’t work. It is a matter of will, process, training and competence. It is not the system’s fault if it is not working. I would first check these other areas, before declaring that SAP doesn’t work (PM).

It is risky to walk over people, even if there is a strong management commitment. The project may be completed, but the recoil effect will surely come, the change resistance will surely hit back at a later stage. Change management... “The art of implementing a change into an organization, that sticks.” There is this force of nature,
which always tries to pull things back to their previous state (CM).


6. DISCUSSION

ERP Implementation causes wide-scale changes for the organization, and its success depends largely on the organizational willingness to commit to the project, cooperate, promote the project, learn new things, solve issues and in many cases put in extra effort to make the implementation a success. I hope this thesis has succeeded in convincing the Reader on the importance of change management in ERP implementation project.

In this part I will discuss the findings from the Empirical case in more detail. The original success factors presented in the Framework seem valid as such, but benefit from further adaptation to ERP implementation context, particularly in the case of large-scale international implementations consisting of multiple rollouts. I will also highlight those findings, which seem to have contributed to the change management success in this empirical case, that are not yet covered in the original Framework.

The findings are compared to some suitable sources in the literature, to develop the ideas further and to ground my recommendations on the more practical change management literature. This, together with the findings from the empirical case, specific to original success factors, gives the proper ground for improving the Framework.

I make the argument that there should be a desire and willingness within the project organization to build and apply change management capability. Also, the change management efforts cannot be executed in isolation from the other project activities. On the contrary, the change management insights and processes should become integrated with the other project activities, so that the full benefits from developing change management capability could be reaped.

The Framework is therefore further adapted to the ERP implementation context based on the empirical findings. The modifications are presented in this Discussion part, and my argument is that these significantly improve the fit and aptness of the Framework to the realities of a large-scale ERP implementation.

The quality of this study is assessed with relative rigor of analysis. Several ways of improving the reliability and validity of the study are presented. Finally, the research questions are answered, applicability of the results is discussed and future areas of research are presented.

6.1. Comparing Salminen and Hannus’ models’ premises to this empirical case

There are some important contextual differences between the cases studied by Salminen (2000) and the ERP implementation project presented in this study. Some aspects that make a considerable difference between these cases are the following: 1) The total number of people involved, 2) the overall portion of the workforce of the company involved in the project, 3) the number of different geographic locations and 4) the business criticality of the project.

Salminen’s original Framework was applied in relatively small cases. They comprised only a minor part of the company’s organization and operations, and the projects were conducted locally. The
case presented in this study affected almost everyone in the organization, and dozens of global rollouts were carried out by the tiered project organization.

In a large company-wide ERP implementation project, where there are several geographic locations of operations, the picture of the change implementation activities becomes increasingly complex. A significant portion of the company’s overall man-hour capacity is used in the implementation efforts. Of course the project cost increases further by the system licenses and integrator consultant fees.

All the project management related activities become more complex. The project organization becomes geographically dispersed, and several layers of control emerge. Understandably the practical arrangements of participation, communication and training also become more complex. The need for proper planning and control mechanisms becomes imperative.

ERP implementation go-live is also of business critical nature, as the business performance is at stake, for the entire unit where the go-live takes place.

Hannus (2004) does not present the exact cases used in the development and testing of his model of strategic change, but apparently the framework has been applied in numerous change consulting projects. The domains of change presented in the framework seem perfectly generalizable to organizations of all sized and structures, and seem to fit both ERP implementation context in general, and this empirical case well. Therefore the improvements to the Framework target the change management success factors, and the strategic change model remains intact.

6.2. Stakeholder management lays the foundation for developing change readiness effectively

6.2.1. Stakeholder management in this empirical case

The change manager and training manager’s comments reveal, that the different stakeholder groups were analyzed in this empirical case. Even though it is not visible what exactly was the scope and approach of this analysis, the results can be seen in several aspects. The different stakeholder groups were identified, as were the needs and different contributions required from them. The trainings, communications and participation approach were adapted for different stakeholder groups. The geographical dispersion and the tiered project organization were also taken into account in the plans.

The change manager’s commented on “systematic stakeholder management from the beginning” and the training manager noted that “different stakeholders needed to be communicated slightly different things”. Even though the degree of formality and methods used in stakeholder management in this case cannot be directly addressed, several traces of it can be seen throughout the interview material.

The interview material reveals that the communication was at least partially planned in terms of who will communicate, when, what and to whom, using different vehicles of communication (trainings, top management communication, participation, project plans and checklists) and applying the stakeholder concepts practically in the process. Reporting and progress control structures, feedback instruments and observation were planned and applied in the implementation
project. The ideas expressed by the informants on the importance of communication and participation contained considerable similarities.

Participation across geographical distances was utilized on different levels of the organization. For instance the top-level management from all major subsidiaries participated in the steering group work. The process development effort also included international participation. In the global rollouts, the Finnish key users gave assistance to the local key users.

From the interview material it is also clear that training contents were different for different stakeholder groups and adapted to the job role of the training participant in question. Some examples of this were process training, system training and change management trainings given to different stakeholder groups.

6.2.2. Impact & implications for the Framework

The interview material shows that important stakeholder groups from all parts of the organization were involved into the project in different ways and different phases. Although the quality of stakeholder management practiced in this project cannot be fully assessed, the only sensible conclusion from this material is that the stakeholder management has contributed to all three areas of change readiness: knowledge, skill and motivation. Different levels of knowledge, skill and motivation are needed from different stakeholders at different times. Lack of organizational readiness will manifest as change resistance, whether it comes to skill, knowledge and motivation. Quoting the change manager, nobody wants to be a “passive target of change”.

Stakeholder management lays the foundation for ensuring the right engagement at the right time, to build change readiness and alleviate adverse change reactions. It is hard to believe, that right timing and content for the involvement and communication could have been reached without analyzing the stakeholders in a systematic way. This makes stakeholder management one of the starting points for change management in a planned change project.

I argue that systematic stakeholder management is necessary for effective change management, especially in a large-scale, planned change project. As the number of people and locations involved in the change effort increases, the benefits of proper stakeholder management and systematic approach to everything become multiplied. I think it is necessary to articulate the importance of proper stakeholder management explicitly, considering the project size and complexity more than likely present in an ERP implementation project. The different stakeholders need to be identified, analyzed, and this information needs to be utilized to achieve better results from the other success factors and project activities in general.

Stakeholder management is so scarcely covered in ERP implementation literature (see 2.7 for further reference), that more research should be conducted on the matter. Considering the applicability of Hannus-Salminen Framework into an ERP implementation project, stakeholder management must be appended into the Framework.
6.3. **Systematic standardization and improvement brings in efficiency and consistency**

6.3.1. **Systematic standardization and improvement in the empirical case**

A general orientation towards effectiveness and excellence is reflected in the informants’ views. The key informants recognized the need to eliminate overlapping activities, standardize and improve the selected approaches as much as feasible. This tendency and preference for a systematic approach may be attributed to personal qualities, company culture or both. Also, the “One Wärtsilä”-vision, implying introduction of universal processes for the entire company, in my interpretation may also encourage applying systematic approach to the entire project.

According to the training manager the training materials and systems were standardized as much as possible. E-trainings were also introduced. The rollout manager’s right hand also referred to “training system”, and the training manager’s presentation gave a clear idea of a systematic approach to the trainings.

The need for tight top-down project control, including schedules, deliverables and scope control, was also recognized and apparently commonly accepted. The global project team drove this approach, while the informants from the functional organization accepted the given approach. For instance the rollout manager’s right hand pointed out that without control the goals would not have been reached. The main pain-points from the functional organization’s perspective related to the implementation approach were the realizability of the schedule, timeliness of the communication within the project organization, and the concern that the mistakes related to the solution may have been repeated in the consequent rollouts. The interviewed members of the global project team described the learning, which had taken place between the rollouts, for example in relation to trainings, communications and KPI reports. This means that effort was put into improving the approach.

6.3.2. **Impact & implications for the Framework**

Although there is no direct evidence on the impact of this systematic approach on the project success, it seems evident that it should contribute both to the efficiency and the quality of all project activities. Systematic approach and improvement should reflect in learning from past experiences, inducing standardization by developing templates, producing direct savings and more consistent quality. As a result of this learning process, less and less is left to coincidence.

Today project management skill and methods are highly developed. This empirical case and research (Prosci Learning Center 2004; Jorgensen et al 2009) show that change management should not be left on the level of improvisation and ad hoc solutions either. Developing systematic, formalized organizational change management methods, seems to increase project success rates dramatically, and may even give competitive edge to the organization.

Only one fourth of the practitioners surveyed by Jorgensen et al (2009) applied formal change management methods consistently in their projects. The overall success rate for their projects was dramatically better, than that of those companies that used only informal methods or improvised their change management.
An inclination towards standardization and improvement of all activities becomes increasingly important as the size and complexity of the project grow. The selected methods need to be constantly improved, based on acquired feedback, experiences and reflection. Standardization should be the aim, as they will be used and re-used throughout the project. In case the organization develops change management competence, the same methods and principles may be reapplied even in the subsequent change efforts.

6.4. Integration between project management & change management turns individual competencies into organizational change management capability

6.4.1. Integration between project management & change management in the empirical case

The informants global project team emphasized the importance of integrating project management and change management functions within the project. In my interpretation this integration consists of two factors: realization of the inseparability (or go-togetherness) of project management and change management; and creation of change management awareness and competence, so that this inseparability can become expressed in practical terms. Based on the empirical case and literature I argue, that this integration enables the individual change management competence to become organizational change management capability. This makes the integration between project management and change management as important as the level of these individual competencies.

The project manager pointed out, that neither change management or traditional project management alone are enough for making the ERP implementation a success. However, he also pointed out the holistic approach as the most important ingredient in project success. In his view the people factor needs to be taken into account in planning and executing the project. The change manager and project manager both stressed the inseparability of change management and project management.

Change management was considered a priority in the project. To begin with, the change manager role was included in the core project team. There was a general intent to develop change management competence, at least within the project organization. Change management consultants were used to provide training and expertise for this purpose. This indicates, that change management as such was considered important.

The project manager said that the budget dedicated for change management was small. The actual change management responsibility was intentionally shared and delegated among the members of the project organization. This clearly requires awareness of change management concepts and recognition of its importance throughout the project organization.

The training manager mentioned that the project manager and change manager were talking about change management “all the time”. This indicates that the project manager and change manager had a shared mindset on the importance of change management, and also on its practical contents. It also shows, how they contributed to change management awareness in the project organization.

From the interviews it is clear that the informants were aware of the possible resistance, factors affecting resistance and the importance of the people component in a change project. This signifies that some degree of change management awareness was indeed attained in the project organization.
The empirical case is full of evidence for this type of integration between project management and change management. The fact that the key people continue to be convinced on the superiority of this approach, and that the implementation was successful are necessary, but not sufficient proofs for the criticality of integrating project management with change management. I will make the case clear by analyzing this integration through the concept of change maturity, and by practical considerations.

6.4.2. Change management maturity arises from systematic development of CM competence and its integration with other activities

There is evidence in the literature, that when the maturity of change management competence increases, more and more of integration takes place, between change management and different functions within the organization. Therefore, integration between change management and project management functions can be seen as one dimension of the maturity of change management competence.

Prosci’s change management maturity model argues that increasing the use of best practices, aiming for a common approach, formalizing and even continuously improving the change management processes will yield the highest profitability and responsiveness for change projects. On the highest level of maturity, change management competence becomes an organizational capability. On this level change management practice is present on all levels of the organization and is part of the organization’s intellectual property and competitive edge (Prosci Learning Center 2004, 2).

Hammoud (2008) considered the attainment of the highest levels of Prosci’s change management maturity model to mean, that the change management processes would integrated into the organization, and the other processes of the organization. In his study, he found positive correlations between high levels of change management maturity and project success rates as measured by adherence to project scope, project time, project cost and stakeholder satisfaction. This strongly supports the case of developing organizational change management capability, as the integration change management competence into all levels of the organization increases the chances of success of any change project.

Therefore, if change management activities should be integrated to all of the project activities, the relationship between project management and change management should also be of an integrative nature. Project manager buy-in for change management becomes imperative. And if the rest of the project team is not knowledgeable about change management, their awareness and support needs to be increased.

6.4.3. Practical considerations for integrating project management & change management

In my view, the overall mission of both practices is to simplify the process of goal attainment: project management by organizing the efforts effectively, and change management by influencing and preparing the organization for the change. Both disciplines require leadership, the desire to break through and lead the way when the supporters are still far and few between. Both disciplines gain efficiency and effectiveness by the development and adoption of formal methodology.

Galuppin & Caems (2007, 162-164) divide the ERP implementation “program” into 8 streams, where 4 of them contain what the authors view as change management activities (organization,
communication, learning and performance management), and the other 4 (SAP implementation, IT/IS, testing, program management) contain the process and system development, building the system provision & support delivery capability, and the actual program management. Let us consider what is the alternative. What happens if these activities are not properly integrated?

According to Turner (2008, 58) “project management is an integrative function”, not a “specialist function”. Cooperation, commitment, definition of responsibilities, and good communication are of essence in organizing the project work (Turner 2008, 58). The project team or manager should not act in isolation. There should be a collaborative working relationship between the project owner and the project manager (Turner 2008, 59).

In a small project the integration may occur more easily, for instance, if the same person is taking care of both project management and change management tasks. Also, if the change impact of the project is not that radical, the lacks in integration (i.e. lacks in change management capability) may not harm the project outcome too much. In a large project, the activities need to be delegated, but always integrated.

This integration starts with the project manager buy-in and support for change management. To enable the integration in practical terms, change management should be given an equal status compared to the other activities taking place in the project. The activities, inputs and outputs need to be defined and carefully synchronized between the streams. Common, regular meetings should be arranged to enable knowledge sharing. There needs to be regular reporting practices, quality control and follow-up on the progress. Finally change management awareness needs to be increased and ideally change management competence consciously developed within the organization.

It is true that the project manager does not need to know every detail of the change management practices. However, a high-level understanding of what the project team members are striving after is extremely beneficial. In this kind of a project, none of the activities can be conducted in vacuum. Therefore even if the adopting organization does not make conscious effort to develop change management competence, the basic awareness of its goals and methods must increase first within the project team, and ideally, finally in the rest of the organization as well.

Ultimately, addressing the organizational capabilities and processes, the change management processes should be integrated with the other processes in the project. At this level the full benefits of change management can be reached, as individual change management competencies are turned into organizational change management capability.

Effective change management is not something that can be glued on a project, it will not stick, and if there are any lacks in the insight and timeliness of communication, the quality will not be sufficient. Therefore the ideal situation is when the implementing organization itself wants to develop change management competence and capability. I argue that this investment is more than worthwhile.

Based on the empirical case and change management maturity concept, the requirements for building organizational change management capability for change projects seem to be:

1) Recognition of the inseparability of project management and change management.

2) Creation of change management awareness and competence.
3) Integrating the activities to turn individual competence into organizational change management capability.

6.5. Improvements to the Framework

6.5.1. Summary of the most relevant findings

The most relevant findings from the analysis of the empirical case can be summarized in the following manner: The more complex and sizable the implementation project is, the more important these three factors become from change management’s perspective, in the quest for a successful implementation:

1) **Stakeholder management** → to increase effectiveness and lay the foundation for CM activities (as discussed in 6.2).

2) **Systematic standardization and improvement of the approach** → to develop competence and increase efficiency (as discussed in 6.3).

3) **Integration between change management and project management** → to transform competence into capability (as discussed in 6.4).

My empirical findings show that these aspects should be appended into the Framework. Even on a more general level, these aspects should be covered more extensively in the ERP implementation literature, considering this evidence of their importance, and their current, relatively scarce coverage in this research tradition.

6.5.2. Deficiencies in the Framework & improvements that draw on the empirical findings

These findings reveal certain deficiencies in the Framework. Salminen’s model does not consider stakeholder management as a factor affecting change project success. Instead, the model treats all people affected by the change as a uniform mass. There is no explicit consideration of who these people are and what are the implications of the change for them: what is the change impact from their perspective, what are their expectations and what would be their ideal contribution for project success. These considerations are partially embedded in the change management success factors, but the concept of systematic stakeholder management lacks altogether.

Salminen’s stand on the relationship between change management and project management is unclear, as he does not address this question directly in his work. Salminen explores several theories of organizational change, without defining change management as such. Activities that belong to the traditional scope of project management are included in the change management success factor Framework. The exact share of responsibilities and the interplay between the activities has not been specified. Salminen may consider change management an umbrella concept, which includes everything that belongs into delivering the change into the organization.

The Framework presented in this thesis can be improved significantly, by incorporating these findings into it. The basic structure of the Framework remains intact. Two new success factors are presented: Effective stakeholder management (deriving from the 1st factor) and Change management orientation (deriving from the 2nd and 3rd factors).
In my view these two new change management success factors are prerequisites for the efficiency and effectiveness of change management in the ERP implementation project, and thereby a necessary addition to the Framework. This change affects the change management success factor part of the Framework (by Salminen 2000). The original success factors are also modified slightly, generalizing on the realities of this empirical case, and taking the impact of the new success factors into account.

If there is potential for improving the strategic change process part of the Framework (by Hannus 2004), the empirical material does not reveal the need or the opportunity to do so.

6.5.3. New success factor: Effective stakeholder management

**#13 - Effective stakeholder management**

1. Use a best practice process for stakeholder management, be proactive and diligent in the matter from the beginning of the project. Identify, analyze, develop strategies & timing for communication & involvement to gain commitment & contribution, execute, follow-up, improve the approach.

2. Ensure that the team understands the process, and contributes to the content. Strive to create a common view in all matters.

3. Identify the relationships between stakeholders and project activities. Apply stakeholder management approach in all the project activities.

**Figure 16 - New success factor: Effective stakeholder management**

Effective stakeholder management lays the foundation for effective change management. It can be seen as one of the most basic change management competences, on which all the other change management success factors build upon. Results of the stakeholder analysis should guide the rest of the change management activities.
6.5.4. New success factor: Change management orientation

1) Increase awareness of change management concepts and its importance. Awareness of change management’s importance and premises must be increased throughout the organization, initially in particular within the project organization. If change management has not been practiced explicitly before, the need for change, the case for change management must be presented and communicated proactively throughout the project.

2) Develop change management methods & competence systematically. Develop a systematic approach to the development of methods and competence. The approach should be based on best practices, and constantly improved through acquired feedback and experiences. Standardize everything that can be standardized. Evaluate the level of competence and the usefulness of the methods in use at regular intervals. In a large company-wide project a systematic, standardization oriented approach will pay off greatly. ERP implementation is in fact a great opportunity to develop change management competence. This valuable competence will also benefit directly any subsequent change project in the future.

3) Integrate change management and project management to transform individual competencies to organizational change management capability. Project manager buy-in is particularly important to enable this. Change management practices should be included in the project management processes. Common meeting practices and reporting mechanisms should be established, so that knowledge is shared and common view of the situation and next steps is created, and all project activities are synchronized.

These steps together enable effective and efficient change management, and if systematically applied, the development and application of change management capability in the project and in the organization at large.
6.5.5. Slight modifications to the original change management success factors

The general improvements are the elaboration and clarification of success factor description and concepts, consideration of different stakeholder groups and the tiered project organization. Most activities require more systematic consideration, when the size and complexity of the project increases. The addition of two new success factors also affects the original success factor contents to some degree. In the improved framework, the interdependencies are explicitly expressed according to the findings from the case.

Detailed list of modifications to success factor descriptions

1. Top management support is included both in success factor #1 (Leadership) and success factor #2 (Management support). A clear division between senior management, line managers and project leaders is also made.

2. The need for line manager support is expressed explicitly in success factor #2 (Management support).

3. The contents of success factor #10 (Motivation) are reduced and simplified. Early proofs of success, also known as “quick wins” are transferred into success factor #4 (Planning). Anchoring the change, and not celebrating victory too early is transferred into success factor #8 (Control). Counseling and motivational packages are left out of the description text, as the rationale for them is not so clear for this type of a project. They may not be affordable or appropriate in a company-wide operational change. Also, due to the mandatory, highly specific and operational nature of the implementation project, motivational efforts might not even give the desired results within the workforce at large. It may be argued, that motivation can be best created by managing the other change management success factors effectively, e.g. by the means of well-managed and timely participation and communication. In the light of this empirical case, perhaps due to good team building, cultural factors, and good integration between project management and change management, the importance of this factor becomes rather small.

6.5.6. The improved prescriptive Framework for change management in ERP implementation projects

In the light of this empirical case, the basic structure of the Hannus-Salminen Framework still seems logical and applicable. The change management success factors can be considered as the prescriptive measures on how to bring the aspired situation into reality, especially regarding the development of people. The change management success factor construct has been improved by slight modifications to the original success factors, and the addition of two new success factors, as illustrated in Figure 18.
Table 8 contains the novel descriptions of the 13 change management success factors in the ERP implementation project’s context.
<table>
<thead>
<tr>
<th>13 change management success factors for ERP implementation</th>
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<tbody>
<tr>
<td><strong>1. Leadership</strong></td>
</tr>
<tr>
<td>The leaders of the project organization and the functional organization are committed to the change, active, enthusiastic, inspire others to believe in and act on the change through their behavior. They participate in the project actively and act promptly to solve any problems.</td>
</tr>
<tr>
<td><strong>2. Management Support</strong></td>
</tr>
<tr>
<td>The senior management of the company should support and express commitment to the project. The support and commitment of the local senior management is also required, to ensure sufficient resources for the project, effective conflict resolution, and increase project’s visibility, credibility and perceived legitimacy. The local senior management should exhibit the leadership aspects described in #1 Leadership. Managerial support should be gained at all levels of the organization. The walk and talk of an individual manager affects his subordinates change perceptions and change response. Additionally, when managers are committed to the change, they will perform any tasks assigned to them more effectively. If there are stray managers, senior management needs to get them back in line.</td>
</tr>
<tr>
<td><strong>3. Need for Change</strong></td>
</tr>
<tr>
<td>The project goals must be linked to the strategy, and the return of investment be properly evaluated. The need for change is formulated into a short, compelling change message that gives an impression of change appropriateness, and creates a strong sense of urgency. This message is communicated to everyone affected by the project, using every channel available, throughout the project. This kind of communication needs to be embedded in all the project activities. All stakeholders should be encouraged to become advocates of the project, for truly pervasive change communication.</td>
</tr>
<tr>
<td><strong>4. Participation</strong></td>
</tr>
<tr>
<td>Participation gives invaluable input to the project and increases the commitment to the entire project. Participation should be enabled wherever possible, especially in the early phases of the project, on all organizational levels. Top management level participation may take place through steering group or committee activity. Key user concept and process owner concept are effective forms of participation to improve the solution and build required system &amp; process competence. End users may participate in several project tasks, for instance in system validation and testing. Participation needs to be planned and designed on several levels, and participants must be prepared for the workshops and testing sessions. Participation can be seen as one form of communication.</td>
</tr>
<tr>
<td><strong>5. Define Roles</strong></td>
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<td>The role change at the cutover is defined and communicated to each employee. The roles, responsibilities and communication points within the tiered project organization are defined from the beginning of the project. The different stakeholder groups have different roles in making the project as successful as possible, and these should be considered throughout the project.</td>
</tr>
<tr>
<td><strong>6. Planning</strong></td>
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<tr>
<td>Absolutely the best project management practices and knowledge must be applied. The project plan needs to be clearly defined. This includes the schedule, budget, work breakdown, resource allocations, risk management, deliverables, intermediary targets, and so on. The plan should be realistic and the expectations communicated to the stakeholders in a timely manner. Strongly top-down oriented, controlled and structured project management approach is recommended. The success however depends on understanding the big picture: what are the real requirements for success for the activities and stakeholder groups, and what are their interdependencies. Quick wins need to be planned for. The project management approach should be evaluated based on feedback and experience, improved upon, and standardized as much as possible.</td>
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</table>
### 13 change management success factors for ERP implementation

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>7. Goal Setting</strong></td>
<td>There needs to be a sensible business case and a vision of how the organization should operate after the implementation. The strategic goals and deliverables of the project are clearly defined. Intermediary targets are set and linked to the overall project goals. Well-specified schedules and deliverables should be used, and communicated to all the stakeholders. Only those changes, which are actually needed for successful implementation, should be included in the project. The operations need to become normal, and employees recover from the effort, before the next change initiative is begun.</td>
</tr>
<tr>
<td><strong>8. Control</strong></td>
<td>The progress and reception of the change should be assessed and monitored. The performance of the project team should also be controlled in a systematic manner. Using both objective and subjective measures is advisable. Any potential changes to the scope must be evaluated against the business benefits. The scope needs to be formally locked well before the go-live. The organization-system performance is monitored both before and after the go-live. The KPIs and corresponding reports need to be set correctly, so that they give a real indication if business is running, as it should. After the go-live the focus is in normalizing the operations. Monitor the situation, and do not celebrate victory too early.</td>
</tr>
<tr>
<td><strong>9. Training</strong></td>
<td>All stakeholder groups need sufficient training to fill the change requirements and carry their tasks in an effective manner. The managers need to know about change reactions and what is expected from them. The key users need to be trained to be able to effectively participate in the workshops. The end users need formal training about the new process, system skills, and how their input affects other processes. Key user concept is useful in building the competence. Trainings need to be timed appropriately. Some time needs to be allowed for the learning of the new skills. The end-users need to know exactly how their role changes in the cutover. The training approach should be evaluated based on feedback and experience, improved upon, and standardized as much as possible.</td>
</tr>
<tr>
<td><strong>10. Communication</strong></td>
<td>Plans and objectives need to be communicated, both within the tiered project organization and to the other stakeholder groups. Multiple channels and adequate volume need to be used to communicate the change vision, project progress, clarifications to relieve concerns and any other project issues. Communication should be early and plentiful, rather than late and scarce. The communication needs to be continued throughout the change effort. Open and free discussion needs to be enabled, feedback and reactions systematically collected and observed. Training and participation are also one form of communication. The stakeholder analysis and strategies serve as the basis for communication planning. Communication should be honest, open, two-ways, and reach each stakeholder group at the right time. The stakeholders should be encouraged and supported to become advocates of the project, for truly pervasive communication.</td>
</tr>
<tr>
<td><strong>11. Motivation</strong></td>
<td>Motivation is vital but arguably created mostly by the other factors. Motivational activities can be used to encourage and activate voluntary stakeholders, such as key users and possible change agents/coaches.</td>
</tr>
<tr>
<td><strong>12. Change management orientation</strong></td>
<td>Increase awareness of change management concepts and importance. Develop change management methods &amp; competence systematically. Integrate change management tightly with project management. Ideally the whole organization should commit to develop change management capability. At the minimum level, the project organization should aim for this.</td>
</tr>
<tr>
<td><strong>13. Effective stakeholder management</strong></td>
<td>Use a best practice process for stakeholder management; be proactive and diligent in the matter from the beginning of the project. Identify, analyze, develop strategies &amp; timing for communication &amp; involvement to gain commitment &amp; contribution, execute, follow-up, and improve the approach. Ensure that the team understands the process, and contributes to the content. Strive to create a common view in all matters. Identify the relationships between stakeholders and project activities. Apply stakeholder management approach in all the project activities.</td>
</tr>
</tbody>
</table>

Table 8 - Novel descriptions of the 13 change management success factors
6.6. Assessing the quality of this study

To assess the validity of a qualitative study, the entire research process needs to be examined. The more accurately the process of the empirical inquiry is described, the more valid the research is (Järvenpää & Kosonen 1996, 20).

The reliability of the study determines whether another researcher could replicate the study. Two or more researchers studying the same phenomenon with similar purposes should be able to reach approximately the same results (Gummesson 1988, 81). Reliability is a prerequisite for the validity of the study. The process and the empirical material have been described to such a degree, that any researcher familiar with qualitative research methods and management sciences should be able to replicate the study.

Given that the empirical case would be a successful global ERP implementation, where change management was practiced (which I consider self-evident given the success of the implementation), the results should be similar as well. Alternative interpretations of the same data would certainly have increased the quality of this study and the understanding of the phenomenon. It would have been very interesting to see the similarities and potential deviations in the interpretations.

The process of empirical inquiry was described closely in chapter 4. The interview material is described to such detail (in chapter 5), that the Reader should be able to make his or her interpretations, and assess the relevancy of my findings. I have portrayed the most important findings in the clearest way possible, reflecting them against the literature (in 6.2, 6.3, 6.4), and indicated the deficiencies of the Framework in the light of these findings (6.5.2). The improvements to the Framework are logical and simple; they bring the Framework into accordance with the empirical material in an economic way.

Internal validity addresses the relationship between the research problem, theoretical concepts and the conclusions. The relationships between these should be logical (Järvenpää & Kosonen 1996, 20). In this study, the fit between the research problem, empirical material, and the method of inquiry has been very good. This is a prerequisite for internal validity presented by Järvenpää & Kosonen (1996, 17).

The Framework has been tested and improved according to the empirical material. The development of the Framework from the theory to the improved Framework by the analysis of the empirical material follows a sound logic, and is clearly explained in this thesis. This establishes the internal validity of the study.

Validity of a construct means that it describes reality with a good fit (Gummesson 1988, 81). Of course this is a more subjective measure, and more research is definitely required to validate the Framework further for practical applications. Based on the earlier research and this empirical case, I argue that this Framework describes the best practices for change management in the ERP implementation project’s context in a realistic, truthful and applicable manner.

Multiple sources of evidence were used, as recommended by Yin (2003, 34). The six informants had different roles in the project, three of them coming from the global project team, and three from the local functional organization, that was the target of the pilot implementation project. While the number of perspectives could have been greater, this is a good sample that gives a convincing overall picture of the progressions of the pilot implementation project, the results of the entire project, and the change management practices applied in these settings. Two key informants have
reviewed the case study. The change manager was entirely satisfied with the case study. The corrections suggested by the rollout manager were related to the details of the go-live event, and were incorporated into the case study. The use of multiple sources of evidence and the reviewing of the case study by the informants contribute to the construct validity.

6.6.1. Limitations of the study

The most applicable forms of triangulation (O’Donoghue & Punch 2003, 78) for this study, would have are increasing the number of the cases, and including higher levels of triangulation into the study, both from empirical and theoretical perspectives.

The choice of Framework has considerably shaped the interview themes and the interpretation of the results. Another researcher might have chosen a different theoretical background for his analysis. A different theoretical Framework would naturally affect the process of inquiry and the interpretation of the results.

The findings of this study depend to some degree on the selection of informants. A more comprehensive presentation of all the stakeholder groups in ERP implementations would have enriched the results found in this study and improved construct validity. Especially interviews from senior management might have given yet another angle to the interview themes. Additionally, interviewing the change management consultants or regular users would have given further reliability for this study. In this way the actual methods used, and the change impact could have been analyzed in more detail.

The interview material offers some insight into the pilot project from Finland Services’ point of view, and some generic view from the global project’s point of view. The situation, and thereby the reactions to change, might have been very different in other divisions in Finland, not to mention the global rollouts.

The blueprint & configuration phases had been already completed in the pilot phase. As the informants hinted this might have affected the commitment (through participation) and ease of acceptance of the new processes (through similarity to what was already being done) in the Finnish implementation. This limitation may create some bias into the empirical material.

The interviews were gained through referral from previous informants. The informants gave careful thought to who would be knowledgeable about the subject within their personal network. All the informants had succeeded in one way or the other in the change process, and all of them definitely knew something about change management. This may create some bias into the empirical material. I must presume however, that a sufficient degree of granularity and exactness has been reached.

Finally, a higher number of interviews in general, even within the same stakeholder groups, would have been very beneficial for strengthening the reliability of this study and improving the quality of the results.

The qualitative data from the interviews could also have been complemented with quantitative data. Empirical material could have been collected through surveys during the implementation project, to give additional perspective on the change impact and the direct results of the change management efforts. Longitudinal surveys that reflected different stakeholder groups’ perspectives would have been ideal for this purpose. This was not possible however, as the project had ended before the empirical inquiry began.
A larger number of cases would have been beneficial for this study. Single-case design is inherently limitations. The generalizability and validity of the conclusions would have been improved by a larger number of cases. The case specific dependencies cannot be fully established. This naturally limits the ground for reliability; construct validity and generalizability of the study. This is why multiple-case designs are usually preferable over single-case designs (Yin 2003, 53). Due to resource constraints, and availability of cases, this objective could not be reached within the scope of this study. However, this thesis is written with such precision, that more cases can be added later should the need arise.

6.7. Conclusion of the thesis

6.7.1. Answers to the research questions

1) How should organizational change be managed in an ERP implementation project?

All the aspects of the change impact and change process need to be carefully considered. The general psychology of change should be understood, and importance of change management generally accepted within the project organization. Best practices should be developed and used. The change management expertise and practices should be integrated into other practices of the project. Based on the empirical case I argue that this is the only way to bring change management capability into existence, and thereby reap its benefits, during the ERP implementation project.

The stakeholder mapping and their respective relationships to project success should be the starting point of all change management efforts. Considering that change management takes care of the organizational component of the change, it is absolutely necessary to know who is being targeted by each effort, when and why. The empirical case indicates that this underlying work is absolutely necessary for building change readiness effectively, at the right time, and by the right measures.

The considerations on the need of formal development of change management competence and capability also reinforce the need for a prescriptive framework to guide the practitioners towards successful change management and thereby successful implementation of the change.

2) Is the Salminen-Hannus Framework presented a good approach for this purpose?

Essentially yes. The structure and the original success factors seem valid in the light of the empirical case. The Framework can help practitioners to communicate the importance of change management, analyze the success factors and the potential gaps in current change management performance and competence, and plan accordingly. However, with small modifications the Framework can be made dramatically better suited for ERP implementation project's context.

3) How could the Framework be improved to make it more prescriptive and adapted to ERP implementation project’s realities?

The empirical material revealed certain deficiencies of the Framework. Two new success factors were appended to the Framework, in order to improve the change management effectiveness and efficiency, thereby improving the success of the implementation project itself.

The perspective of developing change management competence and integrating it with the other
project practices is brought in by success factor #12 Change management orientation. The need and recommendations for systematic stakeholder management are brought in by success factor #13 Effective stakeholder management. The stakeholder information, priorities and strategies should be applied in the original success factors as well. Likewise, the stakeholder management approach, analyses and strategies should be developed and systematically improved during the project, based on experience and feedback.

For a large-scale ERP implementation project, where dozens of rollouts are made, it may make sense to aim for a change management template, which can be used and improved throughout the project.

6.7.2. Contribution & significance of the study

The research question of how should change be managed in an ERP implementation project is inherently significant. Global companies will always have large-scale enterprise system implementation projects ahead of them. The realization of these projects’ business case depends largely on the management of people related issues.

This study presents a useful prescriptive Framework for managing change in the ERP implementation project’s context and relatively thorough discussion on the nature and creation of change management capability.

The practical insights of the empirical case are real and rare. Very few companies choose to disclose this type of information. The empirical case and the related findings and discussion will be interesting reading for any party that has been or will be involved in an ERP implementation. Considering the limited understanding of change management in this context among practitioners, this study hopefully edifies and inspires practitioners to learn more about change management and not to ignore this critically important area of change implementation.

This study introduces and develops a useful prescriptive Framework, for ERP implementation projects. The Framework was tested against the empirical case, and improved accordingly. The Framework could be potentially applied to other large-scale projects of planned change as well.

The theoretical setting for this study is quite unique. According to my knowledge, the synthesis of the models by Salminen (2000) and Hannus (2004) is novel. Also, I have not seen any studies, where either of these models would have been applied in the context of the ERP implementation project. The Framework seems to work well, and further development is called for.

Current ERP implementation literature covers the matter of change management in a very limited fashion, even though the critical importance of change management for ERP implementation project success is recognized. In particular stakeholder management, and the development of change management competence and capability within the project, have received very little attention. This study portrays important evidence on the role of these factors in managing change in ERP implementation project, which also lends to theoretical generalizations.

6.7.3. Call for further research

Considering the practical importance of change management in ERP implementation projects and the potential in this new Framework, it is necessary to develop the theoretical understanding further.
The construct validity for the two new success factors should be established. Another round of interviews could be arranged with the same set of informants, to establish whether they find the two new success factors relevant and understand the formulation. More cases based on the same research design could also be added, to improve the validity and reliability of the findings.

Experienced change management practitioners should evaluate the proposed Framework in peer-reviews. This would give valuable information on the robustness and practical applicability of the prescriptive framework. Action research is called for: the Framework should be applied in an ongoing ERP implementation project, and the results should be carefully analyzed, so that the construct validity of the Framework could be increased further.

The definitions formed for change readiness and change management should also be peer-reviewed, tested and developed further. Assessment tools should be developed for evaluating organizational change readiness.

The importance of motivational activities appeared to be rather low in the empirical case. The reasons for this, and the generalizability to ERP implementation projects should be studied further.

The literature shows that the success factors’ respective importance varies according to the project phase. The question remains however, which of the success factors should be kept on a high level after the operations have become stable and operations normal.

One important question for the system implementing organization is related to the organization’s ability to assess the current level of change management competence and capability. A “balanced score-card” model for change management should be developed, to help organizations assess and develop this crucially important capability in a systematic manner.
LIST OF REFERENCES


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