A comparative study between two IT systems

How managing organizational factors could lead to a successful IT system implementation

Mariam Ezdri
Supervisor: Jukka Hohentahl
Masters program in Management, Communication and IT
Uppsala university
Spring term 2013
Abstract

The implementation of a new IT system in an organization provides many opportunities but as well as serious challenges. Opportunities may arise in the form of increased control and efficiency in the organization, while a common challenge may be that the organization does not perceive value in the investment because management has failed to integrate IT with the rest of the organization. It is only when the organization manages the organizational factors during and after IT implementation that the benefits may be realized. This thesis examines organizational factors involved during the implementation of IT systems and identifies critical factors that are plausibly responsible for the success of the implementation.

The design of the study was a comparative case approach that simultaneously examined two IT system implementations (named Heroma and Agresso) in the same organization, one of them being perceived to be more successful than the other. In the theoretical framework, discussion addressed the issue of how to measure a successful implementation. Based on the literature review and the empirical data, the author was able to identify the critical organizational factors that were most responsible for the level of success of each IT implementation.

The results showed that the Heroma implementation lacked in managing critical organizational factors, leading to a less satisfactory outcome. For example, the exclusion of employees from the implementation process and the lack of competency of the project manager made the Heroma implementation more troublesome then the Agresso implementation.

Keywords: IT system, management, communication, implementation, comparative case study, successful factors, less successful factors, organization.
Acknowledgement

The work presented in this thesis would not have been possible without the support and encouragement of the people around me.

I would like to give a special thanks to my supervisor Jukka Hohenthal for his guidance, helpful advice and encouragement throughout the development of this thesis.

Moreover, I would like to thank all the interview respondents who took their time and openly shared their thoughts, opinions and experiences, which made it possible for me to conduct this research.

Last but not least, many thanks to my family and friends who have given me their genuine support throughout the process. A special thanks to my family for believing in me and showing me their love and encouragement.
# Table of content

1. **Introduction** .................................................................................................................... 6
   1.1 Problem definition ........................................................................................................... 7
   1.2 Purpose ............................................................................................................................ 8
   1.3 The study of delimitation ............................................................................................... 8

2. **Theoretical framework** ......................................................................................................... 9
   2.1 Success- a matter of definition? ........................................................................................ 9
   2.2 Critical factors previously found in IT implementation .................................................... 11
   2.3 The complexity of an IT implementation ........................................................................ 12
      2.3.1 It starts with a plan ................................................................................................... 12
      2.3.1.1 Pre-study of IT implementation .......................................................................... 12
      2.3.2 Organisational culture and its effect on the implementation ..................................... 13
      2.3.2.1 Communication between developers and users ....................................................... 14
      2.3.3 User involvement during IT implementation .............................................................. 14
      2.3.4 Commitment ............................................................................................................. 15
      2.3.4.1 Different factors that effect commitment ............................................................... 15
      2.3.5 Resistance among employees .................................................................................... 16
   2.4 Weakness in theoretical framework .................................................................................. 17
   2.5 Theoretical framework structure ..................................................................................... 20

3. **Methodology** .......................................................................................................................... 22
   3.1 Research strategy ............................................................................................................. 22
   3.2 Triangulation method ...................................................................................................... 23
      3.2.1 Case study ................................................................................................................ 24
      3.2.2 Data collection ......................................................................................................... 25
      3.2.2.1 Participant observant ............................................................................................ 26
      3.2.2.2 Interviews ............................................................................................................. 26
      3.2.2.3 Document studies ................................................................................................ 27
   3.3 Critique of methodology ................................................................................................... 27

4. **Empirical study** ....................................................................................................................... 29
4.1 The Pre-study of the two IT systems .................................................................................. 29
4.2 Comparative study between IT-system Agresso and Heroma ............................................ 31
  4.2.1 Agresso .................................................................................................................... 32
  4.2.2 Heroma .................................................................................................................... 34

5. Analysis ............................................................................................................................. 38

6. Discussion .......................................................................................................................... 43

7. Conclusion .......................................................................................................................... 47
  7.1 Reflection and further studies ......................................................................................... 48

8. References .......................................................................................................................... 50

9. Appendix.1 .......................................................................................................................... 55

10. Appendix.2 ........................................................................................................................ 57
1. Introduction

It has been said that information is power. That statement is especially crucial in businesses where information is the source of competitiveness among companies. Companies demand information about customers, sales orders, and finance in order to become better competitors. However, for the information to be useful, it has to be accurate and up to date. Thus, the management of information handled by the corporate information system is critical to organizational success (Beynon, 2009). Organizations around the world started to invest heavily in IT systems in the last half of the twentieth century and the investment continues to grow as systems have become less expensive, more integrated, and increasingly accessible with multiple functions and devices found in one system (Harper & Utley, 2001; Quinn & Bailey, 1994).

Organizations that decide to implement a new IT system experience many challenges. A successful implementation can result in higher operational efficiency, an improved business process, and in most cases a lower cost for the organization. A failed implementation, however, results in the opposite effect for the organization, employees, and investors; that is, a decreased level of operational efficiency and a higher cost in implementing the new system (Yeo, 2002). During the author’s time at the case organization, she was given the chance to participate in meetings regarding the organization’s IT system implementations. From these observations, she attempted to seek out the critical factors that were responsible for the level of success of each of the two implemented IT systems.

Implementation of an IT system has two major aspects to it: (1) the technical solution of IT systems such as analysis, design, and construction of the system and (2) the organizational factors such as user participation in the implementation process (Beynon, 2009). This thesis focuses on how an organization manages the interaction between users and IT systems in an implementation process. The analysis of research data determined the importance of organizational factors in successful IT implementations. Recent studies show that a mere 37% of IT system implementations are considered successful, about 42% are described as challenging, and the remaining 21% are reported as total failures (Standish Group, 2010). However, over the years, the degree of successful IT system implementation has increased and the relative cost of implementation has declined. This has resulted in organizations continuously maintaining their investments in systems. According to Brown and Jones
(1998), less successful implementations can be caused by deficiencies in organizational as well as technical factors. For example, organizational failures may be due to unrealistic expectations, lack of management support, or a power struggle between different stakeholder groups in an organization. Technical failure may result if the initial design does not comply with the expected end system. Even though more time and budgeted funds are spent on the technical aspect of an implementation, it is usually the organizational factors that are in need of more resources because it is more difficult to manage them (Fitzgerald & Russo, 2005).

It is only when the integration between organizational factors and technology is successful that the implementation can generate value to the organization (Harper & Utley, 2001). Many guidelines have been published about the process of a successful IT implementation. Still, the majority of IT implementations fail, often due to similar problems. One common problem is the management of employees during IT implementation, where employees may be perceived as a burden rather than an asset to the project. Often the problem lies in failure to organize and manage users during the implementation, with resulting effects on the integration of IT implementation (Simon, 2010).

1.1 Problem definition

Compared to other high-tech projects, the project failure rate for information systems is still high, for even though the technical specifications may be met, there may still be resistance from users and management. System acceptance goes further than technical and usability problems; it is often the soft issues such as political and social factors that create problems (Yeo, 2002). The study of information systems thus continues to be essential even though it is a rather confusing field (Checkland & Holwell, 1998). Moreover Simon (2010) claims that even though the technology changed from the 1990s into the 2000s, for example, there is still one constant factor: it is people who still make the decisions, use the systems, and run the projects. Therefore Simon considers that the research about management of IT systems is as true and valid as ever.

To summarize, the success of an IT implementation relies mainly on organizational factors rather than on the actual technology involved (Whitaker, 1987). Organizational factors, for example, may include management support, user involvement, education, and training
The present study was carried out within a public organization, where two different systems were implemented simultaneously: Heroma, a staff and personnel administration system, and Agresso, a financial system primarily used by economists. These systems are described in more detail in the empirical data section of this thesis and analyzed to answer the research questions. The empirical study was inspired by Brown and Duguid (1991) and Brodeau and Robey (2005) who examined how work and learning were actually performed in an organization. Similarly, the present case study explored ways of working and processes of learning processes as they occurred during IT implementation.

1.2 Purpose
The purpose of the thesis was to examine how organizational factors are managed during the process of two IT implementations in a case organization, and to identify which critical factors were plausibly responsible for successful IT implementation.

1.3 The delimitation of study
The study was limited to examining two IT implementations within the same case organization with the aim of identifying critical organizational factors. These critical factors were identified specifically in the case organization. The delimitations were made in order to render the study both feasible and reviewable.
2. Theory

2.1 Success: a matter of definition?

An information system has a broad range of definitions, but it can be generally explained as an umbrella term that includes the computer hardware, software design, and communication technology used to manage the business process of an organization. Information systems can be used for many different applications in an organization; two examples are administration and payroll (Flowers, 1996). Information systems are now an essential part of most organizations as they provide value to business processes. Many organizations are continually investing in their IT systems to improve them further. This means that IT implementations can bring about minor as well as radical changes in an organization. The implementation of an information system includes pre-study, design, delivery, and integration of the system into the organization (Yeo, 2002).

The definition of a successful IT implementation is a subjective opinion and is largely relative to the perspective of the individual or group. From the developer’s point of view, a successful IT implementation is measured by coming in on time, completion under budget, and providing useful functions; innovators consider an IT implementation to be successful when there is a growing, loyal group of users (Chein & Tsaur, 2007). From a manager’s perspective, critical factors could be (1) setting and achieving a goal and (2) efficient communication between different entities of the project (Jiang et al., 2000). From the user perspective, a successful IT implementation is a system that facilitates job performance without making the system less user-friendly. Thus, if an IT implementation has managed to satisfy framework conditions such as time and budget requirements, it still may not necessarily be considered a successful project if the users are not satisfied with the system. A successful IT implementation at one time may become a mild failure in the future (Simon, 2010).

On the contrary, Sauers (1993) claims that an IT implementation is treated as a failure only if the system development is terminated. In other words, a system is not considered to be a failure as long as it attracts promoters and supporters. He assumes that an information system is a triangle relationship between project team, information system, and users/supporters. The project team is the creator of the information system, which serves the supporters’ interests. The users in turn support the project team financially or by showing support by their use of
the system. Thus, if this relationship remains in place, the implementation should not be considered as a failure. Flowers (1996), however, consider a system failure to be when it is not performing as it is expected to do.

Most organizations are not clear about identifying the criteria that define a successful IT implementation. This leads to inconsistency in managing and evaluating these criteria. A study by Thomas and Fernandez (2008) shows that those companies that had defined their expectations towards the new IT system and did a post-measurement, had a significantly higher success rate. The companies in the study defined success in three areas: business success, technical success, and project management. They defined 14 criteria of success within these areas, but only five of them were used: on time, under budget, met business objectives, delivery of benefits, and business continuity (for example, how much the IT project disrupts the normal work routine). However, some of the companies did not or could not distinguish between project success and business success, as some considered that it was possible to obtain project success but not business success. Companies that could distinguish between the three areas of success were the most successful (Thomas & Fernandez, 2008).

The study of Thomas & Fernandez (2008), moreover, showed that many companies found it challenging to measure the cost-benefit of an IT project. There were only a few (5 out of a total of 36 companies) that measured success post-implementation and the rest did so only in case of a failure. Companies mentioned reasons such as lack of management support, limited resources, and difficulty with measurement criteria which discouraged them to measure post-implementation. Another interesting finding that distinguished between companies that effectively measured post-implementation success from those which did not were that the effective companies required their business manager to present results. The person responsible was expected to report to senior management on budget, performance, and assessment in such a way that the company was in control of their investment. The Thomas and Fernandez study emphasizes how important it is to ‘define success in order to accomplish successes’. In other words, companies have a hard time measuring success because of their unclear goals and expectations regarding the new IT system. As a result, the continuous improvement of post-implementation is also affected negatively.
2.2 Critical factors previously found in IT implementation

When implementing a new IT system, risk is inevitable when the result is a product of how the new implementation was managed. Researchers have found patterns of similar critical factors for successful IT system implementation. These critical factors include involving end users during the project (Baril & Huber, 1987; Galletta & Lederer, 1989; Jiang & Klien, 1999); the impact of the size of the project, where the larger the project usually meant higher risk because it generally tended to produce less satisfied users (Jiang & Klien, 1999; Phelan, 2000); insufficiency of the project team, for example, in coordination and leadership skills (Ali & Kidd, 2013; Jiang & Klien, 1999; Phelan, 2000); lack of management support, where the management have not shown enough interest or support towards the project (Ali & Kidd, 2013; Al Mashari et al., 2003; Jiang et al., 1996; Jiang & Klien, 1999; Phelan, 2000; Somers & Nilson, 2004; Whittaker, 1999). Setting unclear goals has been another factor that contributed to less satisfying results, for example, setting clear milestones during the project (Whittaker, 1999); this might have a large impact on communication among and outside the project team (Ali & Kidd, 2013; Al Mashari et al., 2003; Jiang et al., 1996; Al Mashari et al., 2003; Somers & Nilson, 2004).

Moreover, another critical factor is the importance of training and education, which, for example, can reduce the likelihood of resistance among employees (Ali & Kidd, 2013). Less prevalent critical factors have been the purchase of new or untried IT systems and lack of support from the vendor (Whittaker, 1999). Flower (1996) arranged critical factors in the following way, starting with the most crucial: organizational, financial, technical, human, and political factors.

Having now presented several organizational factors based on prior research, the following factors will be elaborated further: organizational culture, communication between developers and end users, commitment among employees, user involvement, and resistance among employees. In the summary of theoretical background, the author describes the entire implementation process, and within this process evaluates the critical organizational factors listed above.
2.3 The complexity of an IT implementation process

2.3.1 It starts with a plan

To introduce a change involves planning, which starts with a vision. Planning has a broad definition but is often associated with clear deadlines that a group must follow (Ginzberg, 1981). A successful project requires a plan that is concrete, clear, and has a focus on key details that do not have hidden agendas (Sweat, 1999). The project plan must state who the project members are and why the implementation should proceed. Furthermore, it should also include a thorough communication plan and requirement specification for the system. This part of the plan is helpful because it sets relevant requirements and minimizes anxiety among employees; likewise, it can also help reduce implementation time. A well-planned project may take less implementation time than a fuzzy implementation project plan. This could make it both more manageable and clearer to developers and for interested users to follow the process (Simon 2010). Also in the development process, issues such as (1) which type of the system should be bought, (2) what skills are required to use the system, and (3) what impact the system has on business development processes should be decided. Since the managing of employees during IT implementation is critical, they should be handled with strategic control and their involvement should be valued. This makes employees feel important, and they may want to eventually contribute to the development process (Huntun & Beeler, 1997; Ives & Olson, 1984).

2.3.1.1 Pre-study of IT implementation

A gradual implementation is considered better in terms of providing greater chances for a successful implementation. A gradual success can be used to continue to motivate employees and confirm investors so that they continue to invest money in the new implementation. At the same time, gradual implementation brings out other aspects that the organization may not have previously considered. For example, it increases the risk of several projects starting simultaneously. With an abrupt implementation, however, there is no time for analysis outside the project area. With a gradual implementation, the IT system can be built right from the start, which gives scope to perceive information system problems in both technical and organizational aspects (Mieritz, 2012).
When creating a new work process or writing requirements for the new IT system, the project team is recommended not to use the old system as reference to the creation of the new system. Instead, employees from various units can enlighten the situation by contributing from their knowledge. However, according to Gerson and Star (1986), the IT system should be built on only empirical knowledge that employees report; tacit knowledge must also be documented in order to obtain a complete picture of the problems related to the system. Consequently, the focus should always be on organizational factors such as users. In this kind of situation, a chief information officer (CIO) could facilitate the problem by having both a technical and organizational understanding. The role of the CIO should be to keep a track of the organization’s policy, financial condition, strategic work, and other obstacles that the organization could face.

2.3.2 Organizational culture and its effect on the implementation

Organizational culture can be defined as the values and rules that make an organization unique, which in turn affect employees’ ways of thinking and hence their behaviour. Critical cultural factors that affect implementation may be, for example, giving employees the opportunity to work independently with appropriate tools to support them in reaching their goals. Cultural factors during IT implementation can also involve trust and teamwork that motivates employees to participate and gain acceptance for the new IT system (Harper & Utley, 2001). Several studies have shown that the integration between organizational culture and the new IT system is a crucial factor for reaping potential benefits from the system. It is when integration between organizational culture and IT system fails that resistance behaviour among employees develops and where employees either reject the IT system or modify it to the existing culture (Ke & Wei, 2008).

Overall, organizations that value free flow of information are more likely to successfully implement IT systems, because free flow of information makes it possible for employers to share their knowledge. Cultural attributes that negatively affect the IT implementation are rules and cautiousness, which make the organization more rigid to change. However Harper and Utley (2001) did not investigate to what extent rules and cautiousness could affect the outcome of IT implementation (Harper & Utley, 2001).
2.3.2.1 Communication between developers and users

The complexity of institutional and cultural differences can easily result in a gap between developers and users. This creates difficulties for the project group in reaching a decision that is satisfactory for everyone. When this situation occurs, stakeholders with the most power and influence tend to get their way (Andersson & Narasumhan, 1979). However, to avoid a gap developing between developers and users, Phelan (2000) states that ‘organizations should understand the broader, overall picture of the organization in addition to the daily routine and technical representatives.’ Furthermore, research shows that there should be continuous dialogue among employees to understand and spread the work routine. A continuous communication between developers’ expertise about the new IT system and the end users’ requirements and expectations on the new implementation is essential to produce a satisfactory result (Zastrocky & Schlier, 2000). Furthermore, it is difficult for both developers and end users to have all the knowledge; therefore, it is recommended to include representatives from different units to discuss organizational conditions and requirements. This gives developers a clearer picture of who is working in the field and to identify their needs. This process is conducted in the current situation analysis.

2.3.3 User involvement during IT implementation

When an organization is ready to install a new IT system, it is vulnerable to all kinds of challenges. The complexity of the project increases if only managers from the higher hierarchy are involved during the development phase (Phelan, 2000). By involving users, the integration between the IT system and working procedures will be more easily practiced (Deetz et al., 2000). According to Jiang & Klien (1996), the involvement of users is one of the critical success factors of IT implementation. Hence they need to be included in the development of any new system or change of duties. This argument is also supported by Deetz et al. (2000), who state that ‘employees’ involvement is highly correlated with success.’ According to Barki & Hartwick (1989), ‘user participation’ is defined as activities, attitudes, and tasks that engage users in the implementation process. These factors have a dynamic role in the project, in relation to the system and other specific information related to implementation. The process is facilitated if these representatives consider the IT implementation as both important and personally relevant (Barki & Hartwick, 1989). When a change is considered personally relevant for people involved in the project, it helps to shape a positive attitude towards the system (Fishbein & Ajzen, 1975).
Should users get involved voluntarily in the project or is it better to force their involvement? According to Hunton & Beeler (1997), forced participants are ineffective, especially if they do not take responsibility for their tasks. Participants who are desirable and should be included in the team are consultants who will be responsible for development of the IT system, a general group of representatives who will work during the implementation but also other indirect participants such as a committee may be desirable to involve. The key to a successful implementation, according to Hunton & Beeler (1997) is that ‘users feel responsible and in control of the system’s creation’; otherwise, the probability is very high that employees will resist the new IT system.

2.3.4 Commitment

Engagement is a complex emotional state that is a mixture of psychological and external factors of organization and time that creates commitment among stakeholders in the organization (Salancik, 1977). Commitment is described as dedication to a project where the person does ‘what is needed to complete the project’; this involves locating activities from the identification of systems to their installation and implementation (Ginzberg, 1981). With support from committed employees, a project has every opportunity to lay a foundation for a positive change. Commitment should start from the higher level of hierarchy, because when individuals at that level signal commitment and positive attitude towards change, their attitude will naturally spread to the rest of the organization. Their role includes, but is not limited to, being updated on the progress of the project, recruiting appropriate staff to the project, and monitoring the process to minimize the degree of unexpected events. When that cannot be prevented, they have to find comprehensive solutions to integrate the technology with the organization (Schein, 1992).

2.3.4.1 Different factors affecting commitment

According to Newman and Sabherwal (1996), there are four kinds of determinants in engagement that affect the outcome of IT implementation: (1) project determinants – factors associated with the project itself, such as project costs and revenues; (2) psychological determinants – that show the relationship between the project group and decision makers; (3) social determinants – that show the complexity of engagement between various stakeholders, policies, the organization, external stakeholders, and potential resistance forces opposed to the
project; and (4) structural determinants – that explain the contextual framework of the project, such as the strategic framework of the project and its political support. Newman and Sabherwal (1996) created a complex model illustrating all the possible stakeholders and factors that play for and against each other. The model shows how complex a project could be and how easy it is for a project to fail, due to many internal and external forces affecting the implementation. At the beginning of the project, financial resources are a key factor in engagement because without sufficient financial support the work becomes more tedious and more difficult to keep involved actors motivated. To maintain continuing commitment, issues that arise during the project should be solved within the planned project time. If the problem becomes chronic or continues without any solution, there is a risk that engagement among employees may decline. According to Hunton and Beeler (1997), a global group should be created comprising various stakeholders who will support and assist the project group in case something unexpected happens. For example, if the manager or any other important team member leaves the project, there is a substantial risk that this could cause problems to the overall development of the project. A well-planned project with backup is therefore essential for these kinds of implementations to operate effectively.

### 2.3.5 Resistance among employees

For many employees, change is neither welcomed nor desired; rather, it is seen as something that interrupts the balance (Strebel, 1996). According to Markus (1983), there are three reasons why people resist a new IT system. The first theory is that people or entities resist for personal reasons, such as ‘losing control’ or ‘What's in it for me?’ The personal and emotional state can be facilitated either by providing education as Kanter (1985) emphasises, requiring them to use the system or (the most advisable) convincing them to get involved in the development of the project. However, education and participation are the more desirable ways to bring resilience to the other side. According to several researchers (Kotter, 1979; Markus, 1983), the role of education is a key factor towards a successful IT implementation, where providing education to employees lowers resistance to change. However, a study by Granger et al. (2002) shows that the most influential form of education is ‘informal network’, in other words, education that employees learn informally from their colleagues in the hallway or in the staffroom.

The second theory described by Markus (1983) holds that resistance could be due to system errors, user interface, or simply that the system is too difficult to use. If the problem is
technical resistance, it could be resolved by correcting the system. This problem can be avoided from the beginning by choosing a system that has a user-friendly design, allowing users to decide what type of operating system they prefer. Markus argues that it is more difficult for individuals to resist the system if it is user-friendly. His third theory is a blend of technology and human problems; this is where the problem of interaction between IT systems and operations occur. Some parts of the organization may have established technology in the organization while other units have difficulty integrating with the system. In light of this, a change in the power structure also plays a role in the integration of an IT system; those who had user knowledge in the previous system might lose that knowledge with the implementation of a new system. So they are a group that is more likely to resist when they lose control over their work.

However, Markus claims that the problem can be avoided from the start by communicating with employees about the company's current state and identifying stakeholders that could be affected by the change. Involving these groups of employees to commit early in the project phase increases the likelihood for the project to succeed. These groups can later work as ambassadors to spread positive messages among other colleagues, and in that way employees create a positive image of the change.

2.4 Weakness in the theoretical framework

In the theoretical framework, I have described what critical factors were most common in previous studies. These factors, among others, were how to involve and commit users in the implementation, how to plan during IT implementation, and what potential risks might appear during the implementation. However, the critical factors discussed in theory have not themselves been reviewed. In this section, therefore, I elaborate on the weaknesses and complexity of these critical factors and why these factors may call for adjustment in the implementation. Simon (2010) claims that implementing a new system is not like ‘baking a cake; organizations cannot follow a recipe with the following ingredients: three consultants, six weeks of testing, two training classes and a healthy dose of project management’ nor does the implementation process end after six months. It is an ongoing process that might fail even after implementation if proper steps have not been taken to maintain the new system.

User involvement and commitment are key success factors that most of researchers find essential in an implementation. Studies have shown that user involvement is most desirable at
the beginning of the implementation (Ehrlich & Rohn, 1994; Noyes et al., 1996). On the other hand, the definition and responsibility of user involvement has not been clearly identified (Kujala, 2003). These responsibilities might include anything from just being informative to consulting participants (Damadoran, 1996). However, as mentioned previously, user involvement is beneficial but can be time- and cost-consuming in terms of attracting the right users and knowing how to use their empirical knowledge. User involvement has not always been positively related to system development and implementation. Certain studies show that involving users is only appropriate in some cases, depending on the type of system development; the more complex a system, the more appropriate it is to involve users. Furthermore, user participation is not always considered to be significant by everyone, especially not by designers. This is often because of insufficient communication and knowledge gap between designers and users that makes cooperation more difficult (Foster & Franz, 1999).

A study by Kujala (2003) shows that communication between users and designers can be difficult, unless the users have some level of technical experience in IT system design. Furthermore, it is also hard for the design team to identify the needs of the users when users cannot define their tacit knowledge. As a solution, Kujala (2003) suggests field studies for the design team to fully understand the user’s everyday work. On the other hand, these kinds of studies create a large amount of raw data that are both time-consuming to rewrite and are perceived as information overflow for the design team. Nonetheless, the study shows that for design analysts it is not essential to acknowledge users’ involvement, but from the user perspective, commitment in implementation is associated with system success. This makes it a sufficient argument for managers to encourage user involvement during the implementation process (Foster & Franz, 1999). These findings emphasise the complexity and challenges of involving users and finding ways to use employees’ knowledge in a way that can be beneficial for the development of IT implementation.

Commitment is another crucial factor similar to user involvement. A study by Wagner and Piccoli (2007) shows that users will not fully show interest in analyzing and evaluating the new system until their own work is affected – in other words, when the system ‘goes live’. They assume that this is not because users are unwilling to commit: they are just not interested in the process until it affects their own work. Therefore, scholars suggest that the
timing of when to involve them and focusing on why they should be involved are two key ingredients in user commitment for the collaboration to work properly during implementation.

Another critical factor discussed in theory has been the role and responsibilities of project management. The different goals of project management and the project should not be confused, as time, cost, and progress are factors that are affected by project management but that are not necessarily related to project success. There have been cases (Munns & Bjeirmi, 1996) where the project was considered successful even though project management failed. For example, if the project overruns its budget and time allocation, it can still be successful. Therefore a distinction should be made between the goal of the project and the goal of the project management (Munns & Bjeirmi, 1996). It appears in the Munns-Bjeirmi study that the outcome of project success is more affected by what type of project is adapted rather than the by project management, where a reliable project management only enhances the effect (Munns & Bjerimi, 1996). Furthermore, another study from Ward and Daniel (2013) has shown that there is a negative link between the presence of project management and senior management satisfaction. Project management can both increase the success of an information system and satisfaction among senior managers. It is advisable, however, for them to be present in the beginning of the implementation process, rather than in the ongoing process where most organizations locate their focus.

Researchers often discuss the purpose of education and the various methods of teaching. Simon (2010), however, considers the timing of education to be more essential. Providing education too far in advance may be a risk, in that users forget about the new task. However, providing education in the middle of testing the system may cause risk users experiencing information overload because users may have to both learn and test the new system at the same time.

Furthermore, a study by Brodeau and Robey (2005) showed that employees would increase their knowledge through informal and unscheduled learning, where they would discuss problems that could be solved together in an informal environment. The more they learned about the new IT system, the more they started to abandon their old work processes and adapt to the new system. This is also a way of learning that is more suitable in a community of practice where people are willing to share knowledge with each other. On the other hand, if involved users miss their chance to attend formal meetings, they may have a harder time
grasping the holistic perspective and risk losing the opportunity to acquire skills in becoming expert on the IT system (Brodeau & Robey, 2005). The improvised user may only react when there is a problem in the system and may not care about learning all the functions of the new IT system, so there should be a careful evaluation of what kind of education is appropriate and most profitable to stimulate learning.

To summarize the theoretical framework, organizational factors such as user involvement, commitment, project management, organizational culture, and education are highlighted in the analysis. Other organizational factors such as power relations and planning are subordinate factors. While all these organizational factors have been found to be essential to success, the specific factors have been emphasised in this account as they were the factors more commonly found in the present case study.

2.5 The theoretical framework structure

I attempting to identify what critical factors are responsible for a successful implementation, relevant theories concerned with organizational factors have been reviewed. This research on the theoretical framework started in parallel with the empirical study, but the empirical data relate to the entire process of implementation. In studying the two IT implementations simultaneously, one of them proved to be more satisfying in terms of user involvement and budget. With this in mind, the theoretical research started with question ‘What can be defined as a successful IT implementation and what can be defined as an IT failure?’ The search began in the Uppsala University Online library by finding articles that studied and defined ‘successful IT implementation’. Most of the articles were from Enterprise Resource Planning (ERP) and project implementation. Many of them address the critical factors of successful IT implementation, which came to form a subsequent part in the theory.

To find more about the definition of successful IT implementation, the Google search engine was used wherever a potentially relevant article was found from another source (Thomas & Fernandez, 2005). Furthermore, in searching for literature in successful IT implementation, I also used course readings such as those from Beynon’s (2009) ‘Business Information Systems’. In this reference, chapter 9 was a useful source where factors such as user and stakeholder involvement and success or failure of IT implementation were described. From
Beynon’s literature review, I was led to original articles such as Lyytinen and Hirschheim (1987); Newman and Sabherwal (1996); and Sauer (1993).

After some research on understanding and defining successful IT implementation, the next step was to find out what critical factors an IT implementation should contain for it to have the conditions to produce a satisfactory result. From a search on key words such as ‘critical factors IT implementation’, an interesting article by (Ali & Kidd, 2013) was retrieved. Critical factors were chosen to study in depth about how an implementation should be planned and executed to attain the best result. The design of the theoretical framework that started with planning and ended with employee resistance was among others inspired by Beynon (2009). Specifically, in chapter 12 Beynon explains how the development of an implementation process was executed.

To strengthen the theoretical framework, I reviewed various works to find weaknesses in the theories, among them works by Brodeau and Robey (2005) and Munns and Bjeirmi (1996). These authors explain the complexity of project management and its effect on the implementation; their study attempted to distinguish between project and project management as two different entities – a project can be considered successful even though project management has failed. Brodeau and Robey (2005) illustrate how employees learn in a community of practice where work, innovation, and learning are interrelated with each other. The work of these scholars is important for this thesis because they explain many complex elements involved in the process of an IT implementation.

During the process of finding relevant articles, I came across many up-to-date ERP articles, while less current articles were found on traditional IT implementations. However, since the thesis addresses traditional IT implementation, the somewhat outdated articles had to be chosen to support the work. I am aware of this deficit, which could limit the credibility of this document. To complement the older articles about traditional IT implementation, some ERP articles on enterprise resource systems were also reviewed. The research for this area is more up-to-date. In this area, articles such as Ainin and Dezdar (2011) and Kamhawi (2007) were selected for review.
3. Methodology

3.1 Research strategy
An inductive study is one in which the author conducts research to develop a theory or theories to apply to empirical data. It is most often based on interpretative evidence from which a general conclusion can be drawn (Jacobsen, 2002). A contrary approach is called a deductive study, which is one in which the methodological approach follows a pathway ‘from empirics to theory’; conclusions from a deductive study are drawn from reasonable assumptions and logical evidence. In this thesis, both strategies have been applied, and I call this phenomenon an abductive strategy, in which the author has changed the approach to be able to move between theory and empirics. This means that theory has grown parallel with empirics to better understand the phenomenon. An advantage of an abductive approach is that the author is not restricted to a singular strategy, having to problematically choose between a purely deductive or inductive strategy. Nonetheless, in order to benefit and apply the abductive strategy effectively, it is crucial that a clear structure is planned to reduce the likelihood of confusion that may be found when using multi-method studies (Bryman, 2008).

The problem discussion for the thesis requires a broader understanding of the complex and extensive IT implementation. Therefore a certain methodology is required to give the author the opportunity to understand the respondent’s thoughts and ideas. Hence, a qualitative approach was relevant for the study in order to understand the underlying problems seen from different respondents’ viewpoints. A qualitative method tends to focus on the respondent’s rather than that of the researcher, which is even more important in a case study because the author is interested in a particular situation, and the qualitative method can be beneficial for this kind of study. What distinguishes the qualitative from the quantitative approach is that the work of the latter process is unstructured and changeable; the work is an ongoing process. Furthermore, the qualitative method attempts to focus more on understanding a given phenomenon in a specific context rather than in generalized findings. The deeper social meanings may be found more often in a qualitative study than in a quantitative approach (Bryman and Bell, 2007).
3.2 Triangulation method

Triangulation is a multi-method study in which more than one approach is used to ensure the quality of the findings. This method was first conceptualized by Weber et al. (1996) using several sources of data to ensure the outcome. The triangulation method is used in both qualitative and quantitative research (Bryman, 2008). The essential of the method is that the collected data are double-checked through multiple sources to increase the validity of findings. By using several sources of data, the method increases the credibility of findings and reveals weaknesses in findings that might otherwise be considered reliable (Tansey, 2007). The same approach has been used in this thesis through interviewing respondents, being a participant observant, and reviewing document studies. Since IT implementation in this case was a rather extensive project with many people involved over nearly four years, the author had to review document studies to secure and complement the gap that every respondent expressed in the interviews. This step was also to minimize the post hoc effect of the IT implementation; it is harder for employees to make personal assumptions about the work process around implementation when there is no evidence of it in document studies, observations, or confirmation by other employees.

The triangulation method in qualitative research has been criticized by Barbour (1998), who argues that every method has its own assumption; for example, how a documented study was written is different from how interviews were conducted. This can lead to disconfirmation. This is something that the author also experienced when collecting data, in situations where respondents expressed ideas differently from what was noted in the document studies and vice versa. To confirm and test the assumptions, the author put the same question to several different people, and if the answers from the majority were similar, she chose to believe the assumption. Using a triangulation method is difficult since different sources of data support different stories, and the only way to validate the right answer is to test the assumption on several individual sources. Another negative factor of triangulation method is that it is time-consuming; one has to check assumptions with several sources before deciding on the most valid one (Bryman, 2008). However that problem did not apply to this study since three months of internship in the case organization gave sufficient amount of time for gathering and confirming data.
3.2.1 Case study
A large-scale public organization with 12,000 employees was chosen as the case organization in which to study IT implementation in detail. The case organization had different independent departments that worked on a range of different tasks. The author had the opportunity to work in a payroll department where one of the IT systems was based. Unlike the traditional ‘one at a time’ IT implementation, this case organization implemented two IT systems in parallel, which made the case study even more interesting from a comparative point of view. Before the two concurrent IT implementations took place, the organization was rather decentralized, and different departments each had their own IT system. Therefore one of the purposes of the new IT system implementation was to integrate the departments and thus create a more centralized system and organization.

The empirical data were gathered during the author’s three-month internship spent in the case organization in early 2013. The assignment that was received from the case organization was to do a ‘post-study’ of the personnel and administration system Heroma that had been implemented in the entire organization nearly four years ago. The organization had experienced problems with the integration of the IT system in the organization since implementation. The author was invited to be the ‘objective eye’ to study the situation and provide suggestions for improvement in future work with the system. The investigation began with an invitation to the author to participate in a closed group with a few selected people, where they discussed how and what should be done to manage the problem with the Heroma system.

This was a group that comprised members who were most knowledgeable about the situation with the Heroma system. The members had different roles: the group consisted of the organization’s IT strategist, the head of the payroll centre, the system administrator for Heroma, and another administrator who took notes; all were present. The meetings also gave the author the opportunity to get to know the organization and who to talk to for more insights. The respondents were chosen using a process tracing method with elite interviewing (more about the interview method can be found in the data collection section 3.2.2, following). The outcome of the interviews was rather insightful concerning how the implementation went and the problems that arose during the period. However, there were some shortcomings in interviews; for example, while some respondents would say
that meetings were held every Monday, others rejected the assumption. To confirm the assumptions, the author had to supplement the interview by reading document studies that the consultants had developed during the implementation process.

As the interviews and document studies were in progress for the Heroma implementation, the author was referred to another parallel implementation called Agresso. It was a financial system that was implemented in another department of the same organization. The Agresso implementation was considered by most respondents to be more successful than the Heroma implementation. In this way, the author was inspired to do a comparative study of these two IT implementations and to find out why one system was considered more successful than the other. Which factors were common to both and what factors distinguished them? By way of explanation, what critical factors were responsible for the success of the IT implementation?

One criticism of comparative analysis is that the results of implementation are rather different: while the Agresso implementation was considered ideal, the Heroma implementation was believed to be less functional. Therefore, it is worth pointing out that this perception was not created by the author, but it represents a picture that the author observed and interpreted from interviews and document studies during her time at the case organization. A frequent problem with the case study approach is that it has low external validity because one cannot generalize the responses received from the field. However, a supporting argument is usually that the author’s intention is not to generalize, but rather to explore a unique event, for example, how an organization has implemented a new system and how it has affected employees in the organization (Bryman, 2008).

3.2.2 Data collection

Data collection took place in different ways in order to obtain a clearer and more comprehensive picture of the two IT implementations. In addition to participant observation, interviews were conducted and document studies were reviewed. The interviewed respondents from Agresso were the project owner, three modular controllers, a system administrator, and a training manager. The interviewed respondents from Heroma were two payroll consultants working within the project, a training manager, a systems administrator, a payroll consultant, and a manager who was affected by the implementation. In addition, the organization’s
current IT strategist and owner of both systems were interviewed. She came in the organization shortly after Heroma implementation and was the project manager of Heroma for a short period of time.

3.2.2.1 Participant observant: The empirical study started with the invitation to participate in meetings for Heroma IT system. There the author met a senior manager, IT strategist, and the system administrator of Heroma, who were all very knowledgeable about Heroma and Agresso implementation. During the author’s time in the case organization, a ‘process tracing’ method was used to find the right respondents for the interviews. This meant that the author researched beforehand and reviewed document studies from the IT implementations, but also asked senior managers to find the important key actors who were part of the implementation. In that way, the author could receive more insight about the key actors as a preparation for interviews. The aim was to do a non-random sampling to include the most important actors that participated during these two IT implementations. These respondents are also referred to in this study as ‘elite actors’ because they had critical sources of information about the event (Peabody et al., 1990; Tansey et al., 2007).

3.2.2.2 Interviews: A number of interviews were conducted with 14 respondents. These were six respondents from the implementation of financial system Agresso and six respondents from the implementation of HR/administrative system Heroma, and the remaining two were the organization’s IT strategist and one manager (end user). These individuals were recommended by the author’s supervisor, who is a business manager for the unit in which the author was working. The supervisor had a good insight into the rest of the organization and therefore helped the author to find the key actors. People the author chose to interview had a mix of different roles and responsibilities during the implementation (see Appendix 1). The project owner for both of the IT projects were women and most of the team members were also women.

As mentioned before, the author received the opportunity to interview the project owner for Agresso but not for Heroma because the project owner had retired. The interview started by giving each respondent a short introduction about the thesis, a brief about the structure of questions followed by asking their permission to record the interview. The interviews lasted between 40 and 60 minutes and were held mostly in the respondents’ offices. This
environment was chosen because staff members feel more comfortable talking about sensitive subjects in a familiar setting (Denscombe, 2009). The interview had an open, semi-structured approach to provide room for other information that might be useful for the thesis. The focus of the interview was on the implementation phase: how it started, how it went, what was the respondent’s role, and what they thought worked well or less well during implementation (see Appendix 2).

3.2.2.3 **Document studies**: To complement the interview and the participant observations from the meeting, revision of document studies of the two IT implementations were considered relevant. These documents contained information on different phases of implementation: the feasibility study, the requirement specification, the budget, and meeting notes. The reason for including the document studies in the data collection was that apart from complementing the interviews and contributing understanding of the broader picture of the implementation, the documents could also provide other information not revealed during interviews.

3.3 **Critique of methodology**

According to Bryman and Bell (2007), a qualitative approach study sometimes poses the risk of being too subjective. There is a risk that the author might filter out what is important according to his/her subjective opinion. Furthermore, there are possibilities that the study might be affected by the author’s age, gender, and personality. To ensure this did not happen, the author used a triangulation method designed to minimize these kinds of bias and to make the data more valid. Another problem that arose during interviews was the use of a voice recorder, which could have made the respondents feel uncomfortable and think twice about their responses. This situation was experienced in a few interviews; when the recorder was off, the person felt more relaxed and revealed other information not mentioned during the recording. However, without a recorder the interviews might not have been as reliable. The risks would be high that the author could have included her own assumptions to make the interview more coherent.

Another difficulty that the author also experienced was the level of credibility in the description by a respondent of a situation that happened nearly four years previously. This made the interview process more challenging in terms of how accurate respondents’ stories...
were and how biased they were in their assumptions. To make the interview as objective and accurate as possible, the method had to be evaluated and tested. Therefore, the author evaluated respondents’ assumptions by conducting cognitive interviews to make them aware of the event that happened four years ago; for example, the author would ask them how they thought the education/training worked during implementation. By asking them to ‘think aloud’, the author could increase the accuracy of their memory. This made it possible to follow the cognitive thought processes of the respondent, and thus be more likely to limit the inaccurate information. Also the behaviour of the respondents was observed to complement their assumptions; that is, how they reacted in terms of body language when asked sensitive questions. For example, folding their arms or creating more distance from the interviewer are all signs that can be useful for the analysis of interviews. This is known as behaviour coding (Schaeffer et al., 2003).

Another possible challenge that the author came across was how truthful the respondent’s assumptions were. How do respondents avoid ‘weak satisfactory’ or ‘strong satisfactory’ answers during the interview? In other words, do respondents only state the ‘satisfactory answer’ that seems more reasonable, rather than the accurate answer. The author tried to minimize this kind of behaviour by asking the respondent more open questions, which measure a higher level of reliability and validity than closed ones. The order of the questions also matters, where easy and objective questions are asked in the beginning and more sensitive questions in the middle or at the end of the interview process. Furthermore, the author gave the respondent time to think between each question before responding; this is known as ‘response latency’. In addition, some interview questions were deliberately re-asked to clarify whether respondents had grasped the question correctly and answered accordingly. This technique is known as ‘respondent debriefing’. These techniques are helpful to use in interviews because they increase the likelihood of accurate answers (Krosnick et al., 2010).
4. Empirical study

4.1 Pre-study of the two IT systems

The pre-study of the HR/administration system (Heroma) started in parallel with the financial system (Agresso) in year 2005. The main reasons behind these two implementations were because the previous systems were believed to be outdated and could not keep up with the high demand from the organisation. The municipality had not updated the software since around 1980s. The previous systems had mainframe computers and the supplier had stopped developing the system. The pilot study for both IT systems began in February 2005. They started off the study by visiting other various public sectors in Sweden. There they discussed the issues around implementation with other users and managers; for example about how useful their chosen systems were and whether they were satisfied with it. At the same time the project group together with senior managers went to several demo presentations provided by potential IT system suppliers. Also in parallel, the project group outlined a current situation analysis of the organization and the work processes related to implementing the new IT system (see Picture.1).

In September 2005 the compilation of the two systems began to make a current situation analysis of the organization's needs and to outline the requirement specification. Furthermore, a utility valuation model (nyttovärdering) called PENG analysis was used as a decision base for the new finance and administration systems. PENG analysis is an analytical model that is used as a platform to calculate investment and organizational changes. The results of the
PENG analysis shows whether an investment is profitable for the organization. PENG analysis for the two systems predicted that the projects would be profitable in the future. The implementation process work required a group of 50 participants for the HR/administration system (Heroma) and around 80 for the financial system (Agresso). In addition, around 50 reference contacts were chosen to evaluate the requirement specifications that the two project groups had created. This evaluation was published on the organization’s intranet available for the rest of the employees.

In early 2006, a forecast was calculated about the potential costs related to the investment in the two systems. The estimated cost for both the HR/administration and financial system was a total of 50 million SEK. The cost included consultancy support, training, licensing costs, project management, and cost of conversion. The calculated forecast also showed that the financial system (Agresso) amounted to 13.7 million SEK in operating costs, while the HR/administration system amounted to 12.2 million SEK.

When it came to deciding which supplier and system to invest in, the organization based its choice from an evaluation framework consisting of: 30% price, 40% functionality and 30% system usability. The evaluation team consisted of different stakeholders and experts. For the financial system (Agresso) the process around procurement and evaluation of the system were divided into eight different modules with one leader for each module. A similar division had also been made for the HR/administration system; however, the system was only split into two modules.

In summary, both projects had been conducted in parallel with each other, with a joint steering committee that was responsible for both projects. The Steering committee was then separated into two separate control groups for HR/administration and financial systems. Each control group consisted of a HR Director / Financial Director, IT strategist, and representatives from various units of the organization. The organization chose a traditional project management model with a steering committee; project teams, working groups and reference groups (see Picture.2). According to the project documents these groups had a professional approach with high ambitions toward the project. The employees had been encouraged to provide suggestions and feedback for the new system through the organization’s intranet. Thus, the document study indicated that work on the system specifications were conducted with a great commitment and responsiveness. Overall the
project groups were open to suggestions coming from the employees; hence the high cost for the project since these kinds of commitments requires more resources and time.

4.2 Comparative study between Agresso and Heroma

**Agresso**

Agresso is the name of the organization's financial system that was implemented on the finance department. The new system was implemented in 2009. Unlike previous IT system the new IT system gives increased flexibility, greater development and a greater user-friendliness. The system is primarily used by economists but also by managers.

**Heroma**

Heroma is the organization's IT support administration and the payroll system. It was also implemented in year 2009. The system is widely used by staff managers but also by employees. In this system, employees have among other services access to the schedule and
salary payments. The major difference between HR/administration and the financial system is that the administration system is used by all employees in the organization, while the financial system is primarily used by economists and managers.

### 4.2.1 Agresso

Agresso is the name of the new IT system that replaced the old IT system in the unit of “economy center” - the organization’s most prioritized unit. The management team chose a traditional project model for this implementation where a steering committee was responsible for all the inquiries around budget and other organizational related questions. The second group was the reference group that consisted of experts, stakeholders and representatives from various units of the organization. The reference group gave recommendations in the technical and organizational issues related to the project team. The project owner was responsible for the overall implementation process and its result.

Apart from the study visit to other organizations around Sweden, the project team started with a current situation analysis of the organization and the old IT system. They collected a mix group of employees from different hierarchies and units to create a holistic perspective of the organizations current situation. The project owner herself expressed "that everybody who wanted to participate and provide suggestions were welcome, we had the door open to everyone in the organization". This kind of environment motivated the participants to feel involved and important in the development of the system. It also provided as one of the manager expressed, "a very broad anchoring of implementation, due to involving people and listening to their suggestions". Another manager further said that "much focus was on the economy unit and how the new system would change the work process”. Many former project members in the Agresso project group as well as Heroma project group described the project owner of Agresso as “very open person and receptive to suggestions and new information about the project”. It was also told that she was very good at utilizing staff expertise and creating the right group dynamic. This resulted in the creation of skilled and enthusiastic teams who gave their best efforts in the project.

During the IT implementation process the project group divided the employees’ responsibility into nine different subgroups with each having a team leader; the different groups were
responsible for creating different modules. These modules were among other invoices, financial accounting, and accounts versus. The employees that were involved in creating the modules for the system were the same employees who would in future work daily with the new IT system. The project owner always tried to remain the focus on organization and the users, Agresso IT system was therefore chosen together with employees. This meant also that the reception of the system was a natural process to the users. The reason why Agresso IT system was chosen, expressed by one of the respondent that “it will facilitate the integration of IT system if everything was in the same system.” In that way those who were involved in the project updated their colleagues that were not as familiar with the project. Thus, when the IT implementation kicked-off most employees had a clear idea about the motive behind the project.

One of the greatest advantages with the new system was that it was similar to the old IT system. For example, the work processes and the functions were rather similar with the old system. The only change that was seen was in the appearance and the invoice program that was considered more complicated than the old system. Thus, the technical implementation was rather successful and was installed without much complication. However, some features in the system were delayed due to integration problem with Heroma. These features were salary- and holiday payment.

The project group had a close contact with the consultants from Agresso and the reference group, both the project owner and the team member stated that "the project owner met the reference group every Monday to talk about the project's development while she also received updates about the organization." The project owner also kept a close contact with the steering committee. The project owner herself expressed that "the most important thing to have under such intense implementation is to have a positive attitude, if the managers radiate a positive energy it automatically motivates the employees positively." When asked how the project owner put her argument to obtain financial support from the steering committee she expressed that "when one wants more money for the project one must be able to present arguments and if they are still not convinced, one must back up the argument with consequences as a result from not achieving financial support. This was an effective way for the project owner to motivate the board for more money".
EkoPA was a collective communication term for the two IT systems. The group was responsible for coordinating all communication concerning the two IT systems. They used multiple channels to disseminate information about the IT implementation and training sessions. The communication channel that was primarily used was the organization's intranet and newsletters. Shortly before the beginning of IT implementation EkoPA held an information meeting for managers, where they discussed the implementation process of the two new IT systems and eventually when to provide education to users. The respondents were overall satisfied with the work of EkoPA and most of them expressed that they received continuous updates about the project’s development. However, the structure of the training program had been criticized for its lack of holistic view and was said to be too detailed in the content. As a result, the purpose of the training session was unclear and the structure of the program was less pedagogical to its participants. This was an assumption made by several respondents who attended the training sessions. As a defense the education manager expressed that, “with the time and resources we had I think we did a very good job, one cannot have done it better with regards to the circumstances.”

Overall this IT implementation was a risky project that concerned 700 employees in the organization. At the same time other organizational changes such as the implementation of a new school administration system was also progressing alongside. This gave the implementation weaker circumstances to succeed.

4.2.2 Heroma

Heroma is a HR and administration IT system that was implemented in the entire organization and it has both passive and active users. The active users were staff managers and payroll consultants who used the system as their main work tool, while the passive users consisted of other employees who used the system to access their schedules and monthly salary report. The pre study for Heroma also started in early 2005 parallel to Agresso implementation. The management team also created similar project model for Heroma where a separate steering committee, reference group and project team was created. Similar to Agresso implementation the Heroma project also began its preparation by visiting other public organizations to gather information about potential IT systems. One of many exchanges the organization received from their study visit was the importance of a detailed specification requirement. Therefore, the project team wrote a detailed specification for the vendor to achieve a common
understanding of the requirements needed for the new IT system. The former project member said that "the requirement for the Heroma system was very specific; we sat and worked it down to details", on the other side, another former project member expressed that "the system requirement was not at all thoroughly done, maybe that was one of the reasons why Heroma had so many system failures from the beginning."

It was rather unclear how the users were involved in the project. A former project member expressed that they had invited managers and employees from various units to participate in the project. While others have argued that this was not the case, too much emphasis had been placed on one unit, in this case the payroll center, while the rest of the organization was not equally prioritized.

The commitment towards the IT implementation among users has always been sufficient for both Heroma and Agresso projects. Users have been motivated to actively take part in the project. However, it has been difficult for the project team to look over the structure and exploit user’s experience. This is because as a former project member expressed, "we had lack of resources throughout the project; we had to really fight to get it all together." In addition several project members expressed that "they did not get the help or support from senior managers as they had wished". The consultants from the supplier of Heroma were only present during the implementation even if the project team wanted to retain consultants for a longer time. However, the steering group did not grant them this opportunity. Another respondent expressed as an argument that the payroll centre had never been the highest priority for the management team; instead they had to independently negotiate for more support and resources. Therefore, this implementation was particularly sensitive to employees in the payroll centre because they compared themselves with the IT implementation that took place in parallel in the economy center. Several project member inclusive the project owner of Agresso have expressed that “it was not the lack of management support or even lack of resources that made Heroma implementation troublesome, but the problem lies in lack of leadership skill and inner power play.”

Furthermore some respondents criticized the way managers managed the Heroma implementation in terms of consultancy support. They did not receive as much consultant as they wished for, which was according to one respondent due to the tight budget, while the
Agresso team had access to consultancy support several months after the implementation. This was considered to be unfair according to several former project members of Heroma.

The IT implementation on the organization’s largest unit was one of the most stressful implementation that the organization had experienced, because the project team decided to implement all the system functions at once. This created a chaotic scenario and forced employees to rapidly learn all the functions, otherwise for example the monthly salary would not be paid in time. To obtain access to the system and learn how to navigate around the employee schedule, the managers and their assistants were forced to attend the training sessions. The training consisted of two compulsory sessions and one optional workshop, while the two formers sessions were theoretical the latter workshop was practical case oriented. The compulsory training classes had been decided by the board, as one respondent confirmed "not attending the training session would not give access to the IT system". In retrospect, the training sessions had received a lot of criticism; a part of that criticism was that the education focused too much on "one time tasks" such as the creation of the employee schedule, which would only be managed occasionally. As one responded expressed it as, “when it was time to demonstrate different daily tasks like how to check salary payment, managers had already signed out from the class”.

A manager who attended an information meeting just before the announcement of the new IT implementation in 2009, said that "they had heard about a new IT system that would be implemented, but they didn’t expect it to be this soon." These managers were then responsible for the information to be disseminated to their employees. However, there were some managers who did not prioritize the information meeting which resulted that their employees found it late and through rumors from others. Many believe that one information meeting was not enough to communicate the IT implementation. The current organization IT strategist claimed that “the information meeting should have been in a more “selling” rhetoric where the informants should have pointed out the benefits with the new IT system to capture manager’s interest.”

Furthermore many users does not consider Heroma system to be user-friendly, as defense one respondent expressed that "the system is built in that way so that no unnecessary errors is committed by users and not everyone has access to all information, the access to information is dependent on the areas of responsibility. For example most employees can only look at
their own profile and other general information. A restrictive design has deliberately been chosen to avoid unnecessary errors and costs for the organization”. However, it appears from the document study and from other involved respondents that Heroma IT system was chosen because it had the highest score in user friendly design.

The project owner for Heroma was described according to some respondents from Agresso project team but also from the project member of Heroma as ”responsive, and preferred to work by herself”. Former project member of Heroma described her as someone who "knew best about how the project would be managed and therefore would prefer not to involve others”. Also the communication was inadequate between the project team, steering committee and reference group. While the project team for Agresso met their reference group each week to share information on project development and operations, similar initiative was not taken for Heroma project. Some respondents expressed that the project team did meet their reference group a few times before and during implementation, but that the meeting was one-way communication solely about the project’s progress.

According to respondents the project owner was not interested in gaining input from the reference group and other employees in the process of implementation because “she knew best”. On the other hand, managers and employees in the reference group did not want to attend the weekly meetings because of the negative impression they received from project owner and they felt excluded from participating in discussions. In contrast, the project member expressed that they "noticed the number of people fell for every time they held a meeting, so we decided to no longer hold a meeting because people did not participate”. In conclusion the Heroma implementation was a complex and troublesome project for all the involved employees, not because of the internal struggle but also because of external changes that occurred at that time.
5. Analysis

In the theoretical framework, I discussed why organizations have difficulty measuring the success of a post-IT implementation. The reason seems to be that many organizations do not have a clear idea about what the definition of success means to them; consequently, they also fail to recognize the potential benefit or cost saving that the new IT implementation has provided (Thomas & Fernandez, 2008). The same explanation applied for the case organization, where senior managers’ intention was to buy a new IT system to improve efficiency and delegation of responsibilities. However, since no post-study had been conducted, one could not measure the potential positive effects this new IT system might have brought, for example, in terms of job performance and work efficiency. One of the respondents interviewed expressed the opinion that the restrictive design of the IT system had saved them a large amount of money compared to the previous IT system, but that the positive effects on employees were unknown.

On the other hand, some of the managers interviewed said that the new IT system was beneficial for employees because the work process had become easier and clearer than the previous IT system. Employees, however, disagreed and stated that the new IT system was more time-consuming and more difficult to understand. This made their work more stressful than before, especially for employees using the Heroma system. As recently as spring 2012, an external consultant company did an evaluation of employee satisfaction for the new IT system. The results showed that a large number of employees were unsatisfied. Six months later, therefore, the organization started a development group for Heroma. The aim was to open a dialogue with employees in the hope of increasing, among other things, user satisfaction. This project is ongoing at the present time.

The planning of the two IT implementations was well organized. The plan stated who the project members were and why the implementation should take place. The project also included a communication plan and requirement specification for the new system (Ginzberg, 1981). However, there was one factor that departed from the ideal; that was the use of the ‘old’ system as a reference for creating the work process of the new system (Miertz, 2010). In going against the theory of using the old system as reference for the new system, the project team missed identifying managers as a potential group of resisters. As a result, managers did
not receive appropriate help and support as needed. Another factor the author observed was the use of the same project plan for both IT systems. As Simon (2010) noted, one project is never similar to another one, so ‘one size fits all’ might not have been applicable in this case. As mentioned, the Heroma implementation was bigger, more complex, involved more users, and the implementation had an effect on the entire organization. Applying the same project plan for both implementations was thus a risky decision.

Organizational culture is another factor that played a central role in this study (Harper & Utley, 2001). The decision makers in both implementations had an approach that put too much importance on financial resources and effectiveness. This led the focus away from change management to the technical aspect of the implementation. This was also one of the reasons why many employees were not satisfied with the quality of training. Another important factor that the study identified was the relation between trust, independency, and user acceptance (ibid.). In the Heroma implementation, the project owner was considered to be a more solitary leader and preferred to work with small groups or alone. This pushed away employees in the committee and reference group from feeling a part of the implementation process. As a result, this attitude made them gradually build a negative picture of the IT implementation and the project team. The project leader for Agresso was more open and communicative and had close contact with all levels of management; she assured the team members of her trust and would give them independent scope to work with the process. This in turn encouraged employees to build a positive attitude towards the implementation.

Several scholars (Hunton & Berkel, 1997; Newman & Sabherwal, 1996) have mentioned the importance of having a committee that monitors activities during implementation. The same project structure was created for Heroma and Agresso. But while the Agresso project team reported to and asked for support from the committee, this communication was lacked for the Heroma team. One spontaneous question that the author asked during one of the interviews was: ‘Didn’t the committee, which should monitor all the activities, call for a meeting if there was a problem? Did they not notice the behaviour of Heroma’s project manager?’ The respondent said, ‘What if the project manager is good at hiding the real issue? There’s nothing anybody could have done to foresee this’. This dialogue explains how vacuous a project model with different groups and committees can be if the members are not able to actively foresee problems and other hidden agendas (Sweat, 1999). Therefore, as Simon (2010) states, just the act of fulfilling the key ingredients of an implementation (two
consultants, one project manager, a committee, and six weeks of implementation) does not mean the work will be done.

This reveals another issue about the various external and internal determinants that might affect a project’s outcome. In this study, all the determinants played a key role in the project outcomes, specifically: delegation of resources, the relationship between project manager and decision maker, the groups of resistance to the system, and the political framework (Newman & Sabherwal, 1996). These determinants were very difficult to manage, given the financial resources and consultant advice, which were considered to have fallen short, especially in the Heroma implementation. The resistance of managers and the external political framework also made some decisions more difficult and inert than usual since the Heroma system operated employee payrolls. This factor was unique to this case study because of the external political rules and regulations that had to follow Swedish law. It made the IT implementation more complex than the older system, which resulted in a more restricted and less user-friendly IT system design.

When there is an extensive implementation in a large organization, the risk is greater that system integration problems will be encountered among the various departments (Markus, 1983). This was also evident in the case study; for example, in the Heroma implementation, some departments such as the payroll centre were more active during the implementation than other departments. This different level of activity among the departments caused an imbalance in the way they perceived system integration. One possible explanation of the different level of system integration was the overall departmental interest in the new system. A study by Wagner and Piccoli (2007) showed that employees did not care about the implementation until it affected their own work. Applying this to the Heroma implementation, some managers expressed the opinion that the news about IT implementation was sudden, while other managers who followed the implementation process thought a change to a new IT system was necessary. This meant that former managers who thought the IT implementation was too sudden had not shown any particular interest in the development process, so they believed it to be a rapid change. This also meant that even if the communication team attempted to hold regular meetings, seminars, and training sessions, their efforts may have not been realized because employees would filter information that was currently not affecting them, to protect themselves from information overload (ibid.).
To deal with these psychological tendencies such as filtering unnecessary information, Wagner and Piccoli (2007) and Simon (2010) suggest *when* and *why* to inform is crucial in the cognitive learning process. Offering training and education is another important note the project team should be attentive to before ‘going live’ with the change, as Markus (1983) and Kotter (1989) also recognize. This can be a key factor in minimizing employee resistance and prevent information overload. Note that the same problem was not experienced among the project team and employees in the Agresso implementation, partially because the change was less dramatic, in fact there was only one function in the system that changed appearance while the rest was similar to the old IT system, partially because most of the users were active and had about the same level of information and attention throughout the implementation process.

The IT implementation in the case organization showcased that deficit in resources and limited support from senior managers led to employees solving tasks on their own. An alternative solution was a community of practice where employees would help each other with the new IT system to complete their work before deadline. A minority of the employees learned the new IT system by attending the training sessions, while a majority sought help from each other. Formal education was neither offered to everyone nor was it sufficiently useful for those who attended. Ignorance and insufficient education sessions led to mass confusion in the organization which led to drastic solutions such as seeking help from colleagues. These colleagues would gather in the informal environment and help each other through exchange of knowledge and ideas. The more they exchanged knowledge, the more they would gain new insights to solving various problems (Brown & Duguid, 1991). Also Brodeau and Robey (2005) showed that employees learn more in the informal environment. In the case organization, employees were required to learn and manage the new system. As a result of the forced indoctrination of the new system, many employees could not see the potential benefits the system offered.

Despite orders from above, many managers refused to use the new system without supplementary complemented support. The pilot group was the first one to experience the new IT system, and they saw a demand for education consultants. Some departments had more ‘community practice’ than others, which helped them solve their problems faster. However, since all departments were related to each other work-wise, and while some departments were struggling with the new system, the pilot group saw the need to send educational consultants to these departments. This idea might not have been realized if the
community of practice had not been as established as it was in certain departments. This particular example shows that learning, working, and innovation are related just as in the study by Brown and Duguid (1991).
# Discussion

Throughout this thesis, I have described how the case organization managed two IT implementations and, foremost, what critical organizational factors have been identified that could plausibly be responsible for a successful IT implementation. Two major IT implementations were executed in parallel in the case organization, the Heroma implementation being more extensive than the Agresso. As illustrated in the empirical study, a similar project model was used for both IT systems, yet the outcome was different. Consequently, there were three main reasons why Heroma’s implementation started off in a troublesome way: (1) the complexity and size of the implementation posed more risks of failure; this was a factor identified by Miertiz (2012) – the more extensive the IT implementation, the greater the risk for it to fail; (2) the Heroma implementation was advertised among employees as a system change rather than an implementation change, thus creating the wrong expectations among users, as observed by Sweat (1999) who emphasised the importance of a clear and well thought plan that does not have any hidden agendas. By not communicating the change as implementation, it could be considered as equivalent to having ‘hidden agendas’, even if the communication team did not do this deliberately; (3) the management never realized how substantial the implementation was, which affected their expectations and planning with regard to the new system.

Even several years after the implementations, the organization has some difficulty integrating the system, with problems such as unsatisfied users, fewer resources, and inability to offer proper support for users. If a survey had been conducted on customer satisfaction immediately after IT implementation, the report would most likely have identified fewer satisfied users. However, the post-project implementation has arrived at a phase where ‘time heals all wounds’ since users are now familiar with the system and learn more as the days pass by. Therefore, how one measures a successful and less successful IT implementation should be questioned, because eventually all IT implementation could become satisfactory in time; some are accepted right after implementation while others might take several years. The Heroma implementation is evidence of that.

Meanwhile Agresso had three main reasons why it succeeded right from the start: (1) it was a smaller implementation and affected a smaller group of users; (2) the new system was rather similar to the old one, therefore the changes were not very dramatic; (3) Agresso received
more resources in terms of finance and consultation, which created the right conditions to succeed with the implementation.

One question is whether Heroma implementation was in its foundation a difficult project or whether the project managers made the project more difficult to implement? According to Munns and Bjeirmi (1996), a project that is easier to implement has more opportunity to succeed than a difficult one, whereas competent project management only enhances the effect. Agresso was an example of an easier and less dramatic implementation which turned out to be successful, and its well-organized project management only enhanced the impact. That is, the impact of the project management on the implementation does not play a significant role, according to Munns and Bjeirmi (ibid.). On the other hand, Ward and Daniel (2013) conclude that the success of IT implementation increases if the project management is present in the beginning of the implementation; they argue that the role of the project management is significant in the success of the implementation. The Heroma implementation was considered to be more dynamic and therefore also more demanding to manage. However, the implementation would not be completed without a constant presence of project management. Therefore, one could argue that Munns and Bjerimi’s (1996) statement that a project that is easier to implement has more opportunity to succeed may be true though, on the other hand, the statement about the less significant role of project management cannot be applicable in the case study for both implementations, particularly not for Heroma.

The start of the project is critical for the rest of the project outcome, as Ward and Daniel (2013) have suggested. The difference between the two project managers in the present case is that the Agresso manager involved users from different hierarchies, which made it easier for her to obtain a general idea about what the users’ expectations were. Meanwhile, the Heroma manager involved users mostly from one department, which made it difficult for her to understand the overall perspective of the current situation. Nevertheless, project managers can change the outcome of the project in the early stages by starting to consider the importance of users and the organization as a whole. Applying this to the case study, if the project manager of Heroma had started differently, the outcome of Heroma may not have not been as troublesome.

User involvement in both Heroma and Agresso was beneficial for both projects’ development. However, because of the size and complexity of the Heroma implementation, it would have
been more beneficial for the development if more heterogeneous users were involved (Foster & Franz, 1999). Several respondents expressed the opinion that the team would have benefited from the role of a chief information officer who could evaluate the IT system from both a technical and organizational perspective. The CIO would have done a better job at allocating and understanding users’ needs, requiring a more integrated perspective. However, this was a role that was not very well established when the case organization implemented the IT systems.

Another interesting contrast observed in this case study was how much the project owner’s personality and attitude might have affected the process, and hence the outcome of IT implementation. The case study suggests that there may be a relation between a project owner’s personality and the outcome of an implementation. The Heroma project owner was described as a solitary leader, less able to deliberate arguments and delegate responsibility to other employees. Consequently, this had a negative effect on the development of the project. The Agresso project owner, however, was described as more open, positive, and communicative. Nonetheless, this contrast does not mean that the Heroma owner was less knowledgeable or less competent; only the possibility that she may have lacked the desirable leadership skill suited for this type of project. Perhaps in the future the management should do an evaluation of potential project owners suitable for a certain project; likewise when managers evaluate several choices for a new system.

Both project owners in this case were women, and most of the employees working with the implementation were women. What kind of possible problems or advantages might arise from this? The advantages for a woman to be a project manager are, among other things, their ability to multi-task, be detail-oriented and, above all, communicative. On one hand, to be able to communicate is a skill that women are naturally good at. On the other hand, they have a harder time achieving a satisfying result and taking all the responsibility upon themselves (Folkman & Zenger, 2012; Young, 2010). These described qualities are not only harmful for the development of the project but also personally harmful to oneself. To be able to communicate and motivate team members during the project was a trait that the project manager for Agresso had, hence the satisfactory result. This did not, however, apply for the project manager of Heroma, who was also a woman. Perhaps the findings show that personality trait has nothing to do with gender differences; a woman can be as poor in communication as men are in multitasking.
A final factor that the case study showed was the importance of education, though only if it is structured and organized in a way that benefits employees. For example, the possibility of more consultants and several sessions of training can be helpful. Otherwise, the case study showed that most of the employees learned to navigate around the system with help from their colleagues. This was because there were not sufficient resources for everyone to attend the classes; in fact, the senior managers did not even offer training to ‘one time users’. Instead, these users had to take online courses. Nevertheless, the case study suggested that for employees’ continuous learning of the new system, two classes of training were not enough, instead ‘informal networking’ proved to be more beneficial for them. This is also shown in the study by Piccoli and Wagner (2007), where ‘informal networking’ education was seen as more preferable among employees. Perhaps to complement education like training sessions, expert users should be made available for a longer period of time post-implementation to help employees in need. This is a solution that was also reported in Whitaker’s study (1999).
7. Conclusion

The purpose of this thesis was to describe how two different IT implementations proceeded in the same case organization and from that to find out what major critical factors could contribute to a successful IT implementation. The research found that user involvement is one critical factor that facilitated the post-implementation. This was a factor that was in short supply during the Heroma implementation, where employees felt that more users from different hierarchies could have been involved.

Other crucial factors that the theory implied were the importance of management support and choosing a competent project leader. In the case study, management support played an important role during implementation but was not the most crucial factor. The case study showed that the most essential factor was the leadership style that a project manager possessed. The desirable leadership skills of a project manager turned out to have a substantial effect on the outcome of the implementation. Prior studies mention the importance of competent project leader but do not specifically explain what it means for implementation. The results of this study indicate that no matter how competent a project manager is, for these kinds of projects an extroverted, communicative leader is more desirable. If the leader does not possess those qualities, there may be a greater risk of misunderstanding and fragmentation among groups of employees.

From this conclusion arises another crucial factor that was lacking in Heroma: communication between the project group and the rest of the organization. If communication had been more frequent from the project manager’s side, the occurrence of misunderstandings between different groups would have decreased. Sometimes, it is as simple as a lack of communication that can lead to mistakes. The findings also show that the fourth critical factor is having a comprehensive perspective of the organization. The project leader should be open for suggestions and should be willing to understand the holistic perspective of the organization during the project. In that way, the project leader will have a better bird’s-eye view of the current situation and therefore facilitate the identification of potential problems.

The findings also showed that the stressful situation and the insufficient resources to educate users brought employees together and formed a community of practice, where employees helped each other to better complete their daily tasks. From the community of practice arose
the idea of education consultants who could help employees from other departments if they had difficulties integrating the IT system in the organization. The idea might have not emerged if the feeling of community had not been there.

Finally, the case study also showed the importance of stakeholder analysis which was not instituted during the Heroma IT implementation, which created a strong resistance towards the new system. By identifying the stakeholders, the project team can better understand the different stakeholder needs and limitations. In that way, the project team can provide them with the right support.

7.1 Reflection and further studies

After several months of struggling with this thesis, I realized how extensive this research has been. There were several factors that I analyzed during the process of thesis writing and which is valuable to reflect upon. One of these reflections is on the negative view of Heroma. As described in the empirical study, Heroma was an extensive and troublesome implementation for several reasons identified in analysis. One of the many reasons the Heroma implementation was considered as problematic was the organizational reforms that happened parallel with these two IT implementation. This might have led the employees to release all their anger and frustration upon the Heroma implementation. In other words, Heroma might not have been perceived as troublesome if other organizational changes had not happened in parallel. Nevertheless, this is just a reflection and cannot be assumed to be true.

Other reflections have been around the research strategy. If there was one factor that I could have changed in the study, it would have been to make the purpose of the study more specific, i.e., just focusing on user involvement. As a result, there were difficulties in finding relevant theories that integrated the theoretical chapter. The breadth of the study also created problems to go deeper into the discussion, but at the same time the master program required the focus be on all three areas of management, IT, and communication. This was perhaps one of the main reasons why the thesis became more wide-ranging than it should have been. Other than changing the delimitation of the thesis, the same research method could have been chosen to collect data, because that method was well suited to the research question. Another factor that might be useful for future students who want to do comparative study in similar areas such as
IT implementation and IT project evaluation is to ensure that the cases chosen for comparison are similar in size, budget, and users. This would make the findings more valid. Another proposal could be to study the resistance among employees; what possible factors might be hidden behind their resistance? Is the resistance because of less communication, less user-friendly technology, lack of planning, or as simple a reason as human cognitive defence against information overload that causes the resistance? Whatever the case, how should the project management change its strategy to make the IT implementation as trouble-free as possible for all the actors?
8. References

Articles


Academic Press) 73-110


Peabody, Robert L. et al. (1990)"Interviewing Political Elites” PS: Political Science and Politics 23(3), pp. 451-55


Quinn, James B, and Bailey N Martin (1994) "information technology: increasing productivity in Services," Academy of management executive 8:3 August pp.28-52


Salancik R G (1977) “Commitment and the Control of Organizational Behavior and Belief” New Directions in Organizational Behavior, B. Staw and G.R. Salancik (eds.), Chicago: St. Clair Press, IL, pp. 1-54


Sweat J (1999) “Learning Curve - Savvy Companies Apply The Painful Lessons Learned From Implementing Enterprise Resource Planning Software To Next-Generation Applications”. Information Week. August, Number 746, p. 44


Wagner L. E, Piccoli, G (2007) "Moving beyond user participation to achieve successful information system design" *Communications of the ACM*, Vol.50 No.12

Wit, A D (1988)”Measurement of project success” *Project Management* 6 (3) pp.164-170


Whitaker. (1987) “Overcoming the barriers to successful implementation of information technology in the U.K hotel industry” *Int.J. Hospitality Management* Vol. 6 No. 4 pp. 229 235


**Books**


Fishbein M, Ajzen I (1975)”Belief, Attitude, Intentions and behavior: An Introduction to Theory and Research” Addison Wesley, Boston, MA


pp. 263-314.


Internet sources


Interviews
Current system administrator (Agresso)
Financial officer and ex. project member (Agresso)
Financial officer and ex. project member (Agresso)
Financial officer and ex. project member (Agresso)
Project owner/Project manager (Agresso)
Controller and ex. project member (Agresso)
Organizations IT strategist
Manager who was affected by the implementation
Current system administrator and was among the first that received training and education (Heroma)
Payroll consultant and was a participant in the pilot group (Heroma)
Project member and ex project member (Heroma)
Payroll consultant and ex project member (Heroma)
Payroll consultant and responsible for the training/education of the new IT system (Heroma)
Business officer (Heroma)
### Appendix.1

<table>
<thead>
<tr>
<th>Areas of responsibility</th>
<th>Agresso</th>
<th>Area of responsibility</th>
<th>Heroma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current system administrator</td>
<td>“The reason why two IT system was implement parallel is because of the system integration”</td>
<td>Current system administrator and was among the first that received training and education</td>
<td>“It was a lot of information in short time, it was a chaotic situation and I would never wish to be in the same situation as the project manager”</td>
</tr>
<tr>
<td>Financial officer and ex. project member</td>
<td>“Our highest priority was that the IT system should be user friendly that’s why we involved employees early in process to hear their demands for the new IT system”</td>
<td>Payroll consultant and was a participant in the pilot group</td>
<td>“There was no support calls provided for us, so we made it with the help of colleagues”</td>
</tr>
<tr>
<td>Financial officer and ex. project member</td>
<td>“Nobody received extra support in terms of money, all the participants volunteered freely while doing their normal work parallel”</td>
<td>Project member and ex project member</td>
<td>“It was quite expected that we would get a new IT system since the old one would eventually stop operating”</td>
</tr>
<tr>
<td>Financial officer and ex. project member</td>
<td>“We looked at the old system while creating requirement specification and work process for the new system, nobody told us to think differently”</td>
<td>Payroll consultant and ex project member</td>
<td>“The project manager was the most competent manager we could have received for this project, without her the project would not have progressed equally”</td>
</tr>
<tr>
<td>Project owner/project manager</td>
<td>“It is very important to listen to the employees suggestion and at the same time having a positive attitude towards change can facilitate many problems”</td>
<td>Payroll consultant and responsible for the training/education of the new IT system</td>
<td>“The financial devotion for the training and education was not sufficient hence the quality of the education”</td>
</tr>
<tr>
<td>Controller and</td>
<td>“The focus was a lot</td>
<td>Business officer</td>
<td>“This implementation”</td>
</tr>
<tr>
<td>Role</td>
<td>Statement</td>
<td>Reflection</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>ex. project member</td>
<td><strong>on the departments that got affected by the implementation</strong> and what changes it might bring to these departments.”</td>
<td><strong>was the most chaotic projects I have experienced in my working life, and now in the hindsight we are glad that we were able to complete the implementation despite the many setbacks during the implementation.”</strong></td>
<td></td>
</tr>
<tr>
<td>Organizations IT strategist</td>
<td><strong>“We should have chosen a better rhetoric when informing the employees, where we should have emphasized more on advantages and what benefits the system gives to employees, as well several information meeting should have been held to create more awareness for the new IT system”</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager who was affected by the implementation</td>
<td><strong>“We heard that a new IT system would be implemented but we did not expected it to be so fast”</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix. 2

Interview guide:

1. Name, job description, current position in the organization

2. Implementation process
   - How do you think the implementation went four years ago? (Respondent's role in the project, feasibility study, requirement specifications, project group, participation, choice of supplier)

3. Communication
   - How do you think the communication between the project team and steering committee (management) was?
   - How do you think the communication between the project team and the users were?
   - How do you think the users experienced communication that came from above?
   - How do you think the training/education worked?

4. Comparison between the two IT systems
   - Why do you think organization implemented two different IT systems at the same time?
   - Why do you think the implementation of Heroma was considered to be more problematic than Agresso's?
   - Which system do you think works better?

5. Lesson learned (?) and suggestion on further improvement of the IT systems and
   - If you had the chance to do the implementation, how would you have done then?
   - What lessons would you take from this IT system implementation?