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A Framework for International Implementations of Enterprise Resource Planning Systems in Small and Medium sized Enterprises

Master of Science Thesis

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Abstract

Small and Medium Sized Enterprises (SMEs) are crucial on most markets today, and they are also starting to compete more globally. In order to support growth and competitiveness, it is becoming increasingly common that they implement Enterprise Resource Planning systems in order to integrate their business. The implementation phase is typically critical to reap any of the intended benefits and research within the area has historically focused on finding the critical success factors (CSFs) for successful implementation projects.

The purpose of this thesis is to identify the critical success factors for international Enterprise Resource Planning (ERP) implementations in small and medium sized enterprises (SMEs). This is done through a qualitative approach with a literature study complemented by case studies and interviews at Swedish companies.

This resulted in a framework of ten CSFs: top management support, aligning the ERP strategy with ERP strategy, change management, communication, project team, vendors and consultants, training and education, culture and language – and individuals, regulations and legislations, management style and execution.

The framework is further evaluated and discussed for a Swedish SME that is about to implement an ERP system internationally.

Key words: *CSFs for ERP implementation, ERP implementation in SMEs, international ERP implementation*

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1. Introduction

The background having led up to this thesis and its purpose are presented in the following chapter.

1.1 Background

The global business world of today tend to move companies of all sizes closer to a collaborative model, where supply-chains are increasingly vertically integrated, inventories are drastically reduced, throughput times are shortened and customers are expecting better service as well as reliable delivery dates (Shankarnarayanan, n.d.). This puts new demands on small and medium sized enterprises (SMEs), which are often found as first- or second-tier suppliers to larger companies and thus vital in most economies today. In order to survive, they are pressured to improve and cut costs and also synchronize their information flow and physical flow with customers and suppliers in their supply chain (Gélinas and Bigras, 2004).

This calls for effective information management, and it is becoming increasingly common that SMEs turn to enterprise resource planning (ERP) systems as a part of achieving an increased integration and availability of information. ERP systems are commercial, off-the-shelf information software systems, which incorporate and integrate all parts of a business (Bingi, Sharma & Godla, 1999; Markus, Tanis and Fenema, 2000; Rashid, Hossain & Patrick, 2002). This integration of data allows organizations to more efficiently “manage the resources of people, materials and money” (Markus *et al.*, 2000a, p. 42).

Even though there are many documented benefits from ERP systems, such as improved decision-making, cost reductions and cycle time reductions (Poston and Grabski, 2001; Shang and Seddon, 2000), research show that many ERP projects are considered failures and do not lead to the expected corporate goals (Umble, Haft & Umble., 2003). These projects can even cause organizational bankruptcy due to systems not meeting the expected efficiency improvements in combination with runaway expenditures (Bulkeley, 1996). According to Yen and Sheu, (2004) most of these problems are not typically related to technical issues,

but rather related to business problems that arise during the implementation of the system.

Many previous studies have undertaken the task of minimizing the risks in ERP projects by trying to identify the critical success factors (CSF) to ERP system implementations (see e.g.: Somers and Nelson, 2001; Umble *et al.*, 2003; Soja, 2006), which are those factors that are crucial to manage in order for the implementation project to be successful (Francoise, Bourgault & Pellerin, 2009). Such studies have historically mainly focused on larger companies, as ERPs initially were judged too expensive and complex for smaller companies.

SMEs might in fact face an even more difficult implementation process since they typically have lower levels of IT-competence, scarce resources and a short-term focus on strategy (Buonanno *et. al*, 2005; Metaxiotis, 2011; Sharma, 2011). Several researchers have therefore discussed the need to treat ERP implementations in SMEs differently and find the CSFs that apply specifically to ERP implementations in SMEs (Muscatello, Small & Chen, 2003; Snider, da Silveira & Balakrishnan, 2009).

Furthermore, as the global market is becoming an increasingly attractive market for SMEs and they start operating globally, SMEs will also strive to implement ERP systems on numerous sites and in several countries since “information is an enabler of globalism” (Levy and Powell, 2005, p. 1). An international rollout of an ERP system is often even more complex since it necessitates careful consideration of factors such as language and culture, in addition to the factors normally affecting an ERP implementation (Hawking, 2000).

Research on international rollouts of ERP systems has again focused mainly on larger companies and as far as our knowledge goes, research on critical success factors for SME that implement an ERP system internationally is scarce. It is nonetheless a scenario that is likely to become more common, especially considering the number of SMEs on many markets in combination with the fact that they are competing more globally.

1.2 Purpose

The purpose of this thesis is to identify the critical success factors (CSF) for international enterprise resource planning (ERP) implementations in small to medium enterprises (SME). In order to understand how the combination of being an SME and doing an international implementation affects an ERP implementation and the CSFs, literature on CSFs for both ERP implementations in SMEs and also for international ERP implementations will be studied in order to determine what the CSFs are for the two scenarios. This will be complemented with case studies of three Swedish companies and interviews with two Swedish consultancy firms. The combination of theory and empirical data will result in a framework that will be applied to an SME that is about to implement an ERP system internationally in order to evaluate the framework.

1.3 Disposition

Following the background chapter where the study is presented is a method chapter where the methods used to meet the purpose of the study is described.

Chapter three consists of the theoretical framework, where first section 3.1 consists of a presentation and discussion of existing theory on critical success factors to ERP implementations in SMEs. In section 3.2, a presentation and discussion of the critical success factors affecting international ERP implementations, based on previous studies, is presented.

Chapter four consists of the empirical study, where the case studies are presented, analysed and discussed. This is complemented by interviews with consultants that have experience from previous ERP implementations, both from international implementations and implementations in SMEs.

In chapter five, a framework based on literature and the empirical findings is presented describing the critical success factors for international ERP implementation in SMEs.

In chapter six, this framework is evaluated by a discussion on how it could be applied to Alignment Systems AB, an SME that is about to implement an ERP system internationally. This is done in order to give an example and discuss how the framework can be put to use.

This is followed by a discussion on the results from this research and how it relates to other research in the field. Lastly, chapter eight consists of conclusions for this study and managerial implications.

2. Method

The purpose of this study has been to identify the critical success factors for international implementation of ERP systems in SMEs. The chosen research strategy and the methods applied to meet this purpose will be described throughout this chapter.

2.1 Research Strategy

Both quantitative and qualitative research has been used in previous studies done in order to find CSFs for ERP implementations, for example a quantitative study done by Soja (2006) and a qualitative study done by Markus *et al.* (2000). This choice depends on the purpose of a research, e.g. testing earlier identified CSFs (through a more deductive approach) vs. trying to identify new CSFs (through a more inductive approach).

Also, sometimes this choice reflects the authors' epistemological standpoint. Simply put, an epistemological standpoint relates to whether there is an objective truth or whether truth is relative and thus depends on the context of an event. While someone with a more objective view on truth would argue that the CSFs for an ERP implementation is independent of the companies specific processes and the employees working there, someone with a more subjective outlook on truth would argue that it most certainly depends those factors. (Bryman and Bell, 2011)

The epistemological standpoint of the researcher often determines the chosen research strategy and whether the aim is to test theory, usually through quantitative methods and a deductive approach, or if it should generate theory, usually through qualitative methods a more inductive approach (Bryman and Bell, 2011).

This research was done with the aim of both testing theory and generating theory, which was done with qualitative methods. Since international ERP implementations in SMEs is both a rather new and also a complex phenomenon, a qualitative approach was judged best suited to find this new knowledge. In support of this, Gummesson (2006, p. 167) wrote:

A qualitative approach to research is required, allowing researchers to deal with complexity, context and persona and their multitude of factors, relationships and fuzzy phenomena; conventional statistical methods fail in all these aspects.

Some would disagree with Gummesson and argue that qualitative research lack rigour and transparency and that also research within the social sciences should build on quantitative methods derived from natural sciences (Bryman and Bell, 2011). Gummesson (2006, p. 173) address this critique by arguing that there is “Less rigour than in traditional quantitative approach, yes, but more realism and relevance”. Gillham (2000, p. 6) similarly argue that the chosen method needs to reflect what suits the purpose best and “‘experimental science’ type approaches are ill-suited to the complexity, embedded character, and specificity of real-life phenomena.”

Although qualitative research often is associated with an inductive approach and quantitative research with a deductive approach, it is common that both approaches contain elements of both (Bryman and Bell, 2011), as does this research since the aim is to both test theory and generate new theory.

Using a deductive approach as a research strategy is the most common way of relating theory and research to each other according to Bryman and Bell (2011). It means that the researchers deduce one or several hypotheses from existing theory and previous studies. These hypotheses are then to be tested through the findings from a data collection, which results in the hypotheses being confirmed or rejected and new theories emerge or old ones are revised. (Bryman and Bell, 2011)

The research conducted in this study share many attributes with a deductive research approach: A theoretical framework was constructed, based on critical success factors identified in previous research. These factors guided the more structured parts of the interviews that were conducted (see section 2.4), where the data from the interviews provided an evaluation of the factors found in literature. Finally, based on previous research and the empirical findings of this study, a framework of how SMEs can plan for international ERP system rollouts was suggested.

The interviews did however also provide an element of induction, since new insights regarding what factors are important to successful ERP implementations were also unveiled, mostly through the more unstructured elements of the interviews. An inductive research approach of linking theory with empirical data is, in its crudest form, when observations and findings lead to generalization and theories (Bryman and Bell, 2011).

The inductive elements of the study encouraged one or several iterations, where the theoretical framework was revised and updated based on the new insights.

This mixed approach, with an iterative process of moving back and forth between empirical data and theory, as well as not applying a pure inductive or deductive approach, is common in business research according to Bryman and Bell (2011). Dubois and Gadde (2002) suggest that this *systematic combining* of theory and empirical findings enables the researcher to “expand his understanding of both theory and empirical phenomena” as compared to using a strict linear process of phases, as in a pure inductive or deductive research approach (ibid, p. 555).

2.2 Theoretical framework

The literature review was conducted mainly through the use of academic online search engines, such as Google Scholar, Emerald and IEEE Xplore. To screen the existing literature, search words used were for example: “ERP implementation”; “SME + ERP”; “critical success factors + ERP”; “CSF + ERP”. Also the sources and references used in the articles found were further investigated.

The studies found were categorized into one of three categories: “general CSFs for ERP implementations”; “CSFs for ERP implementations in SMEs” and “CSFs in international ERP implementations”. For each category, a matrix was formed, made up by the critical success factors identified in previous studies by respective author (see table 1 and 12). This was done to identify the most frequently discussed CSFs and what is perceived by previous researchers to be the most important CSFs in respective category. A more explicit definition of CSFs will be presented in chapter 3.

Some identified CSFs were labelled differently by different authors, but the meaning of the CSFs were very similar, e.g.: “top management support”; “involvement of top management” and “top management dedication” or “vendor support”; “vendor partnership”, “vendor environment” and “use of consultants”. For example, in these two cases, the CSFs were grouped into “top management support” and “vendor and consultants” respectively.

Throughout the study, the ambition was to provide an as objective theoretical framework as possible, where also criticism towards ERP implementations was a part of the discussion to complement the findings of how to successfully implement an ERP system.

2.3 Case studies

The case study method has been frequently employed in previous studies on ERP implementation, as it is an appropriate technique when there is a need to get an extensive understanding about a contemporary and complex event that is outside the control of the researcher (Flyvbjerg, 2006; Yin, 2009). For such research, multiple-case studies have often been conducted, as it allows the researchers to compare the cases and find differences and similarities (Yin, 2009).

For this study, since only one interview was possible at each company due to time and access restrictions, it was also judged very important to get a broader understanding and the joint analysis of several cases is often useful to explore a general phenomenon (Bryman and Bell, 2011). Some would perhaps question whether case is the appropriate term with only one interview conducted at each company. Gillham (2000) for example states that it is very important to use different forms of evidence when conducting case study research and Gummesson (2000) argue that adequate access is an important part of research quality. Nonetheless, it the authors’ belief that lessons can be learned from each single ERP implementation and the cases were therefore treated as separate cases as they all contributed with different interesting facts.

Although the case study method is popular today, it has also been subject to a lot of critique similar to what has been directed towards qualitative research, e.g.

lack of rigour and transparency. Kyburz-Graber (2006, p. 53) for example argue that case studies often focus on “simply describing a complex problem, and to draw conclusions with insufficient rigour”.

Nonetheless, the cases were also meant to complement the literature by investigating if any other CSFs could be identified and describing was therefore a part in order to create understanding. Flyvbjerg (2006) argue that the case study method is particularly useful when learning about something new and when there is a need to narrate about it. Also Gummesson (2007) mean that case study research is effective when trying to generate knowledge and that it “allows the study of complexity, context, ambiguity and chaos” (Gummesson, 2007, p. 229).

The sampling of cases could be seen as a convenience sampling (Bryman and Bell, 2011), which was done since there was a need “To maximize the utility of information” of the cases that we studied (Flyvbjerg, 2006, p. 230), meaning that the companies were chosen based on e.g. size and where, when and how they had implemented their ERP system. Stake (1995, p. 4) seems to agree with this form of sampling for cases as he writes, “The first aim should be to maximize what we can learn. Given our purposes, which cases are likely to lead us to understandings, to assertions, perhaps even to modifying of generalizations?”

Only one company, Miller Graphics, fulfilled both requirements of being an SME and implementing an ERP system internationally, so the other cases were used to support and complemented selected parts of the framework. The first case, ITAB was a larger company that had implemented an ERP system internationally, and thus supported and complemented the international part, whereas Golvabia is an SME that has implemented an ERP and thus supported and complemented that part.

It can be questioned whether the combination of cases on SME implementation and cases on international ERP implementation actually provides a fair picture of international ERP implementation in SMEs, and thus if these cases are relevant for the purpose of this thesis. There could for example be interaction effects that are lost when simply combining the two scenarios.

In order to strengthen the cases and add another view on ERP implementation, consultants working with ERP implementations, both internationally and in SMEs, were interviewed in order to complement the cases and to get an “expert opinion”. This was done in order to incorporate the experience of these consultants into the framework. Since these consultants have worked with multiple implementations in several companies, their view on what the CSFs are is likely to be less affected by the particular context for an implementation.

2.4 Data collection methods

A number of data collection methods can be used for case studies, such as observation or interviews (Yin, 2009). Mainly interviews were chosen for the data collected of this study, as it is a convenient way of collecting data about a complex and lengthy project such as an ERP implementation and it is frequently used within qualitative research (Bryman and Bell, 2011).

As an ERP implementation project stretches from a few months up to years, most other data collection methods such as observation were not possible. Documents and plans could have complemented the interviews, but were often not accessible. All the data that was collected was organized and stored in a database, as it was judged important that both authors would be able access all material at all times (Yin, 2009).

Semi-structured interviews were the main method for collecting data for this research, as they allow for insight and thorough explanations about an event (Yin, 2009), which was judged very important considering the complexity of an ERP implementation and since the aim also was to find new knowledge.

By conducting interviews a deeper and better understanding could be acquired about why a particular CSF was in fact critical and whether it depended on unique circumstances of that company.

The element of unstructured interviewing was considered desirable throughout the case studies. More unstructured interviews encourage respondents to freely discuss aspects of the subject that they find relevant and important. More unstructured interviewing often goes hand-in-hand with qualitative research

and an inductive approach and was thus an important part of this research. (Bryman and Bell, 2011)

Just like there is critique against qualitative research, there is similar critique against unstructured interviewing, e.g. that it is not rigorous and that it is hard to analyze the data (Bryman and Bell, 2011). Nonetheless, the aim was once again not only to test the theory, but also to investigate whether the theory could be complemented. A semi-structured approach was therefore just judged to be very important.

The more unstructured parts of the interviews were conducted by asking one or a few very open questions, such as: "Could you tell us a bit about your recent ERP implementation?" and if necessary, the answers were followed up by further more open questions, such as: "What do you think were the most important factors, which made the implementation successful/unsuccessful?".

Encouraging the interviewees to discuss freely, without being affected by our previous findings, the more unstructured parts of the interviews were always preceding the semi-structured parts.

The more structured elements of the interviews were guided by an interview guide consisting of a list of the CSFs from the theoretical framework (see Appendix A – Interview guide). In these parts of the interviews, the purpose was to get the respondents' opinions on how the CSFs identified in the theoretical framework have affected their ERP implementation.

All interviews (except for the one with the Jeeves consultant Johan Lindgren, which was conducted via Skype) were conducted first hand in order to get as much information out of the interviews as possible. Data collection during an interview is not limited to what the interviewee says, but also includes his or her body language and attitudes (Bryman and Bell, 2011), which will be lost when conducting an interview by for example telephone.

Interviews and information gaps

When conducting interviews there are always potential information gaps and it is important to be critical when obtaining information (Gummesson, 2007). The

possible information gaps for the interviews conducted in this research are discussed briefly below. An information gap could arise:

- Between the interviewee's perception of something and what he or she actually says during an interview, which was addressed by triangulation when possible (Yin, 2009)
- Between what the interviewer means with a question and how the interviewee perceives the question (Bryman and Bell, 2011), which was addressed by carefully reviewing the questions and the phrasing and testing them before the actual interviews.
- Between what the interviewee says and how the interviewee perceives the information, which was addressed by letting the interviewee review the draft from the report (Yin, 2009). It should be noted that this could also have negative effects, as the interviewee might regret something they have said and thus want to omit it from the report (Bryman and Bell, 2011). No such problems were encountered, however. Rather, in some cases the interviewees provided new information that improved the quality of the report.
- Between what the interviewee perceived and what actually happened, which was addressed by triangulation when possible (Yin, 2009)
- Between what the two authors perceived during an interview, which was addressed by thoroughly discussing and comparing the information that was obtained from an interview. The process of discussing the interview and any perceptions that were made from it was also an effective way of coming to new insights together (Bryman and Bell, 2011).
- When translating from Swedish, which was the language in which the interviews were conducted, to English. By continuously sending any written texts between each other and by discussing the meaning of the interview after it was conducted, this possible information gap was addressed.

The interviewees

When it comes to interviewing it is always important to keep mind factors like the position and role of the interviewee and how this might affect the interview

(Bryman and Bell, 2011). The position of each interviewee is therefore briefly described below as a reflection on how this could have affected this research. The interviewees could all be seen as key informants, i.e. they were chosen based on their knowledge about the implementation project and also on their willingness to participate.

One possible bias that needs to be lifted here is the fact that all case interviews were conducted with people from top management. It is possible that this has resulted in a one-sided view on the implementations and that it does not reflect the opinions from all stakeholders such as the actual users of the system. The interviewee's were, however, those that were judged to be the most knowledgeable about the implementation.

Case A – ITAB

The interviewee, who was the CIO, had previously worked as a consultant for ERP implementations. This could have affected the results, as the interviewee's experiences were not limited to those of the implementations that had been done at the company. Nonetheless, it is also possible that this previous experience was one of the reasons that the implementations done at the company mostly were on time and within budget (which is quite rare for ERP implementations) and thus gave the CSFs that were mentioned during this interview even more relevance.

Case B – Golvabia

At Golvabia the interview was done with the CEO who at the time of the implementation was the CFO. This gave us a top management view on the implementation, and perhaps the interview would have given very different results had the interviewee been someone from e.g. customer service. Nonetheless, the CFO was one of the most heavily involved in the implementation project and was therefore judged to have the most knowledge. Still today he is the "super user" at the company, i.e. a heavy user who is more knowledgeable about the system than other users.

Case C – Miller Graphics

The Miller Graphics case was based on a group interview conducted with the business group controller who was the ERP project champion, and a senior consultant from the partner vendor/consultancy. The fact that the interview was conducted with both the internal project champion of the company and the external consultant present, might have affected the interview in a number of ways: First, this might have restricted the internal interviewees responses since the external consultant was also present; second, the external consultant might have affected the responses in such a way that mainly positive aspects of the implementation was emphasised; and third, the external consultants experiences from previous ERP projects was also a contribution from the interview, not only the Miller Graphics implementation. Lastly, the group dynamics could positively have influenced the interview since discussions between interviewees can lead to understandings and interesting findings, especially since the two interviewees had different roles in the implementation project (Bryman and Bell, 2011).

Consultancy interview 1 – Ekan

The interview was conducted with a senior management consultant, today at Ekan consulting, whom is formerly one of the co-founders of one of the largest ERP vendors in Sweden. The input from this interview is seen as complementary since the input comes from an expert with a great deal of experience with ERP implementations both internationally and in SMEs. However, the opinions of what factors are important are of a highly subjective character, built on previous experience.

Consultancy interview 2 – Jeeves

The interviewee has worked at Jeeves with international ERP implementations for approximately 1,5 years and was willing to contribute with valuable information from a consultancy perspective. Having taken part in several international ERP implementations, the input from this interview was valued highly in this study. Neither this consultant had any connection to the cases studied, and is thus seen as complementary and objective towards the cases, but the opinions regarding which factors are important are subjective in character and built on previous experience.

Alignment Systems AB

At Alignment Systems AB all interviews were conducted with the project leader/champion for the ERP implementation and the CIO since they were the ones most knowledgeable about the upcoming implementation project. Perhaps it would have given a more nuanced view if more stakeholders such as future users or someone from top management had been interviewed as well. Due to lack of access and time, this was not possible however.

2.5 Data analysis

All interviews in the data collection were documented, both through sound recordings and notes as a first step in the analysis process. The method of meaning condensation was used, which mean that only the relevant information, the essence of the notes and recordings, were written down into a first textual version of the case.

The second step in the analysis process consisted of a categorization of the data collected in each case. In the data, patterns of categories and subgroups emerged at an early stage of the analysis process, which were allowed to guide a categorization of the data. This is also consistent with the step in the analytical process of “Gradually elaborating a small set of generalizations that cover the consistencies discerned in the database” (Miles and Huberman, 1994: p. 9) where generalizations, in this context, refers to generalization of the findings into groups.

As a third step in the analysis process, the empirical data was analysed with the help of the theoretical framework. Miles and Huberman (1994: p. 9) refers to this step as “Confronting those generalizations with a formalized body of knowledge in the form of constructs of theories”.

The analysis performed shares attributes with the analysis strategy of *relying on theoretical propositions* as suggested by Yin (2009). This strategy suggests that the analytical process should “follow the theoretical propositions that led to your case study” (Yin, 2009: p. 130). As applied in this study, this means that the analysis was guided by the critical success factors identified in the theoretical framework. The resulting analysis is presented in chapter 4.

To give a practical and value-adding dimension of the study, the findings of the theoretical framework, the empirical data collection and finally the analysis, is synthesised into a framework, suggesting how an international SME could embark on the complex project of implementing an ERP system in their global organization. This framework, as well as an example of how it can be applied to an actual case - Alignment Systems AB - is found in chapter 6.

2.6 Research quality and trustworthiness

Gillham (2000) wrote, “for the case study researcher all evidence is of *some* value, and this value (trustworthiness) has to be carefully appraised.” Whereas the quality of quantitative research usually is judged on a predetermined set of criteria, qualitative research is rather judged on its trustworthiness instead (Bryman and Bell, 2011).

Different researchers use different ways of assessing the trustworthiness or quality of research. Within case study research, Yin (2009) describes an approach that is close to the natural sciences based on four tests (construct validity, internal validity, external validity, and reliability), whereas Gummesson (2000) rather judges the quality based on a long list of different criteria (e.g. how well the research process can be followed, the credibility of the research, the adequacy of access and the dynamics of the research process). The trustworthiness of this study is mainly discussed around some of the criteria proposed by Gummesson (2000) such as credibility and adequacy of access, complemented by some points from Yin (2009).

For this research the main question would be whether the constructed framework is credible and valid for an international SME that implement an ERP system. Although case studies cannot be used for generalization to a population in a statistical manner, the results can still be used for analytical generalization (Yin, 2009). In this case, the question is thus if the framework is in fact valid for SMEs that implement an ERP system internationally?

The main bias in this regard is, as discussed above, most likely the lack of triangulation due to lack of access (to conduct more interviewee's and review documents etcetera). Triangulation is not only a way of assessing the credibility

of data, but also a way of creating a deeper understanding about something since input from multiple sources “often allow access to different levels of reality” (Bryman and Bell, 2011, p. 398).

Nonetheless, by comparing the different cases and consultancy interviews, some degree of triangulation has still been possible. Furthermore, any casual relationships that have been assumed have been explained as thoroughly as possible, for example by pattern matching and by addressing rival explanations (Yin, 2009). This is done throughout the text and especially in this chapter.

Furthermore, access was still achieved in some sense. The cases were found by a personal contact that works at Jeeves, which enabled access to interesting and suitable cases. Without this contact it would most likely have been hard to find companies that were fitting for the purpose of this study and willing to participate.

Another possible critique of the framework could be that the theoretical framework is based on research from different countries, whereas the empirical framework is based on the implementation experiences of Swedish companies. However, as mentioned above, the empirical findings are meant to complement the theoretical framework, and not only assess it. By identifying those CSFs that were prevailing, regardless of the country where the research was conducted, replication logic was also used (Yin, 2009).

Furthermore, most CSFs have also been connected with SME characteristics and although such characteristics naturally differ between different cultures, there are some distinct features (such as less resources and IT-knowledge) that seem to be a common property of SMEs around the world.

Another potential weakness is that all companies that were studied had implemented and used the Swedish ERP system Jeeves. Although this research had an organizational focus and did not look at technical details, there is a possibility that the choice of system could have influenced the research. Also, since the personal contact of the authors is attached to Jeeves, it is possible that the interviewees refrained from negative feedback about the system.

2.7 Research journey

Over the course of this research, several interesting discoveries have been made, and a number of difficulties have been encountered. The main learning is perhaps about the process of conducting research, such how to compile and summarize large amounts of literature on previous studies. The main learning here is, however, about the process of getting access to interesting and current information, which amounted to some difficulties in this study.

One such difficulty was that Alignment Systems AB's ERP implementation did not proceed as initially planned, and had just barely been initiated towards the end of this study. Had the company been a little further into their implementation, it is likely that the evaluation of the framework could have resulted in a far more interesting discussion.

Another difficulty was to locate smaller companies that have implemented an ERP system internationally. For this study only one such case was encountered and in retrospective, it could have been interesting to investigate this case deeper, for example by interviewing other stakeholders and compliment with documents and reports from the implementation project. Also at the other companies it would obviously had been interesting to do this in order to get a deeper understanding and a more nuanced view.

Related to this is the fact that this study was conducted during summer vacation times in Sweden. This meant that it was troublesome to get a hold of people and conduct interviews within the timeframe of this study. For future research of this type, it is probably a better idea to conduct it at other times if possible when people have more time and are easier to get in contact with.

3. Theoretical framework

This chapter starts by introducing the rationale behind ERP systems and the possible benefits that a company can expect from such a system. This is followed by a summary on previous studies on CSFs for ERP implementations in SMEs, followed by a summary on research done on international ERP implementations and the CSFs for such implementations.

3.1 Why ERP?

Enterprise resource planning (ERP) systems have for long been considered crucial for effective information management in larger companies (Franciose *et al.*, 2009) and the systems are now being implemented also by SMEs as a way to help them improve and cut costs (Snider *et al.*, 2009; Dixit and Prakash, 2011). SMEs are today vital in most economies, but they are just like larger companies facing challenges like increased competitive pressure and globalization. Therefore, they must “sharpen their business edge by having a secure and reliable information system that provides superior business intelligence, collaboration power, and transactional efficiency” (Upadhyay, Jahanyan & Dan, 2011, p. 140).

An ERP system, which constitutes the largest investment made in information technology for many companies (Sumner, 2003), is a commercial information software system that incorporates and integrates all parts of a business. The system can in this way support and provide information to all functions of an organization, such as human resources, accounting, marketing, sales, distribution, supply-chain management and manufacturing (Bingi, Sharma & Godla, 1999; Markus *et al.*, 2000). The systems are modular and customers can tailor their system with add-on modules to suit their specific needs (Rashid *et al.*, 2002).

Upadhyay *et al.* (2011, p. 141) argue, “ERP provides the necessary infrastructure that forms the operational and transactional system for a business of any size”. However, when ERP systems became common in the beginning of the nineties, they were considered too expensive and complex for smaller companies, and therefore a solution mainly for larger companies. The vendors have, however,

since the end of nineties redirected their attention towards SMEs after the saturation of the market for larger companies and started to develop systems that are both cheaper and better suited for SMEs. (Everdingen *et al.*, 2000)

Chalmers (1999, p. 46) wrote that “small manufacturers have needs as complex as their larger brethren, and targeted, affordable ERP tools and strategies exist for helping these firms compete and improve.” In addition, having an ERP system in place will further help such companies to grow (Chalmers, 1999).

Nonetheless, it is perhaps not all SMEs that will benefit from an ERP system. Sharma (2011, p. 193) wrote:

It is not that every SME will benefit from sophisticated strategy and strategic tools like ERP. Importantly, the competitive advantage of the SME may come from its ability to operate in ways that may not be according to formal industry standards, but may reflect its unique processes that differentiate it from the competition.

Furthermore, an ERP system is still a proportionally bigger investment for SMEs (Mabert, Soni & Venkataramanan, 2000) and the consequences in case of a failed implementation are also likely to be more severe for SMEs (Edwards and Humphries, 2005; Muscatello *et al.*, 2003). Since a high percentage of ERP implementation projects are considered to be failures, i.e. they are over-time, over budget or do not fulfil the purpose (Holland and Light, 1999), it is reasonable to question why companies in general, and SMEs in particular, choose to implement an ERP system.

This decision appears even more important, since a failed ERP system implementation could have serious consequences for the entire organization (Bulkeley, 1996), with FoxMeyer and their bankruptcy being the infamous example of what a failed ERP implementation can lead to. The company claimed that the ERP system they implemented caused severe operational disruptions and in combination with very high expenditure for the implementation, FoxMeyer considered it to have lead to their bankruptcy. (Stein, 1998)

A part of the very foundation of an ERP system is improved decision-making through increased availability of information (Shang and Seddon, 2000; Poston and Grabski, 2001). Rashid *et al.* (2002, p. 2) wrote:

It is universally recognized by large and small-to- medium-size enterprises (SME) that the capability of providing the right information at the right time brings tremendous rewards to organizations in a global competitive world of complex business practices.

Carton and Adam (2005), however, challenge this increase in availability of information and argue that more information might just add complexity to decision-making and possibly not contribute to better decision-making at all. Shang and Seddon (2000), on the other hand, extend on their point and present a framework consisting of five dimensions of business benefits that senior management can expect from an ERP system:

- Operational benefits, such as: cost reduction, cycle time reduction and customer service improvement
- Managerial benefits, such as: improved decision-making, better resource management and better performance control
- Strategic benefits, such as supporting current and future business growth plans
- IT infrastructural benefits
- Organizational benefits, such as: support of business organizational change, empowerment and changed culture with common visions

Many SMEs therefore turn to ERPs in order to accomplish integration and reap such benefits (Eshelman *et al.*, 2001; Elbertsen and van Reekum, 2008). In support of this, several of the above-mentioned benefits have been identified in SMEs that have been studied post-implementations (Mabert *et al.*, 2001; Equey and Fragnière, 2008; Federici, 2009).

For other SMEs there might not be much of a choice, as another common reason for ERP adoption among SMEs today is external pressure, for example from customers and suppliers that require SMEs that are part of their supply chain to adopt systems that can increase integration between them and enable them to access certain information (Chalmers, 1999; Gélinas and Bigras, 2004; Elbertsen and van Reekum, 2008). In general, many larger companies are re-focusing on their core-activities, meaning that SMEs, which often act as first and second-tier to the larger companies, need to complement them by synchronizing both their physical flow and their information flow (Gélinas and Bigras, 2004). Similarly,

Raymond and Uwizeyemungu (2007, p. 499) conclude:

With the advent of globalization and the appearance of new forms of organization [sic] based on networks of closely cooperating firms, it seems clear that successfully implementing ERP systems will take on an increased significance for the survival, growth, and competitiveness of many SMEs.

A further reason for SMEs to implement an ERP system is the fact that they are starting to compete more globally, as mentioned above. Implementing an ERP system in an international organization often results in global standardization of business processes, which also allows the company to treat demand and supply from a global perspective (Carton and Adam, 2003). Shang and Seddon (2000) further argues that ERP systems provide business benefits which enable worldwide expansion through centralized world operation, global resource management, multi-currency capability, global market penetration, and deployment of solutions quickly and cost efficiently across worldwide.

3.2 CSFs for ERP implementations in SMEs

It should be repeated here that the intended benefits of an ERP system could be realized only once the system has been successfully implemented in the organization. The main risks of failures in ERP system implementations are usually not related to technical issues, but rather associated with business challenges such as resistance towards change (Jarrar *et al.*, 2000).

To minimize such risks and to increase the chances of a successful implementation, many researchers have used the *Critical success factor* (CSF)-technique. The technique was initially used within management, and a definition that has been frequently cited is one by Rockart (1979, p. 85):

"Critical success factors thus are, for any business, the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. They are the few key areas where "things must go right" for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired. "

The technique has become increasingly common for IT-projects, as there is a need to also understand and relate to the business context that the system will

be used within (Flynn and Arce, 1997). Since the CSF-technique is used within various areas, the definition also differs slightly, but within the ERP context CSFs are in general considered to be those factors or “areas of expertise, the management of which is particularly crucial for project success.” (Francoise *et al.* 2009, p. 373).

Such research on CSFs for ERP implementation has historically mainly been focusing on larger companies resulting in the identification of CSFs such as: top management support, business process change, clear goals and objectives, training and education, change management, the project team, vendors and consultants, project management and minimal customization (see e.g. Holland and Light, 1999; Marcus *et al.* 2000; Umble *et al.*).

Since a failed implementation could be particularly disastrous for SMEs with limited resources (Muscatello *et al.*, 2003), more recent research has focused on finding the CSFs for ERP implementation in SMEs. SMEs furthermore have several characteristics that could influence an ERP implementation and Argyropoulou *et al.* (2007, p. 408) state that “project implementation of ERP systems in SMEs is different because the needs, operating requirements, logistics fulfillment, and financial capabilities of the SMEs are much different in most cases from those of large enterprises.”

Huin (2004) also point at such characteristics and argues that ERP implementation in SMEs is in fact more difficult, while Sun, Yazdani & Overend, (2005, p. 190) suggest that many SMEs simply don’t have the financial capabilities to deal with all CSFs and “SMEs are thereby forced to make implementation compromises according to resource constraints, and subsequently putting the success of their ERP project at risk”.

In contrast, Adam and O’Doherty (2000, p. 305) argue that the problems associated with ERP implementation projects might in fact be due to the size and complexity of the larger companies where implementation have been studied and that “SMEs can expect to have an easier time implementing ERPs than the current literature suggests”. Similarly, Doom *et al.* (2010) suggest that SMEs have less complex processes than larger companies meaning that problems that arise

in SMEs during an ERP implementation are less complex and can thus often be solved.

Nonetheless, several other researchers have argued that SMEs' lack of resources, with regards to monetary funds, human resources and skills, could have a negative effect on an ERP implementation (Gable and Stewart, 1999; Chalmers, 1999; Buonanno, 2005; Metaxiotis, 2011, Laukkanen *et al.*, 2007). It can for example be hard for SMEs to dedicate people to the implementation project and training can disturb operational activities to the point where they have to momentarily stop during the implementation process, as there might not be any employees available to take on additional assignments (Snider *et. al*, 2009; Metaxiotis, 2011).

Another frequently mentioned SME characteristic that is likely to negatively affect the implementation process negatively is SMEs' lack of IT-knowledge (Buonanno *et al.*, 2005; Gable and Stewart, 1999). Most SMEs have little experience from implementation projects of IT-systems in general (Zach, 2010) and there often is a lack of both strategic planning of IT-systems and IT-expertise (Buonanno *et. al*, 2005).

All in all, SMEs seem to have characteristics that could influence an ERP implementation and thus also the CSFs for ERP implementation. Considering the criticality of the implementation phase for the outcome of the ERP implementation, it is interesting to investigate the CSFs that are specific for ERP implementation in SMEs, and see how these CSFs relate to SME characteristics.

As there are several recent studies done specifically to find CSF for SMEs, these studies have been summarized and will be the topic for the rest of this section (see Table 1). The purpose of the following section is also to explain the relevance of such CSFs for SMEs by relating to SME properties. By doing this, the aim is to provide a better picture of why these CSFs are in fact critical for SMEs.

Author	Type of study	Top management support	Project management	The project team	Strategic planning	ERP fit and process change	Change management	External consultants	Communication
Muscatello <i>et al.</i> (2003)	Case study	X	X		X	X			
Snider <i>et al.</i> (2009)	Case study	X	X	X		X		X	
Federici (2009)	Questionnaire survey					X	X		
Doom <i>et al.</i> (2010)	Case study	X	X	X	X		X	X	X
Kale <i>et al.</i> (2010)	Questionnaire survey	X					X	X	
Malhotra and Temponi (2010)	Literature review			X	X		X	X	
Upadhyay <i>et al.</i> (2011)	Questionnaire survey			X	X				
Basu <i>et al.</i> (2011)	Questionnaire survey		X		X	X			X
Shaul and Tauber (2012)	Questionnaire survey	X	X		X	X	X		X

Table 1. Critical success factors for ERP implementations in SMEs.

3.2.1 Top management support

Top management support is the most frequently identified critical success factor in previous studies and there seems to be a prevailing general consensus regarding the importance of this CSF. Only Soja (2006) seem to oppose this as his results indicated that top management support and involvement is more important in large companies than in small.

Snider *et al.* (2009, p. 19), on the other hand, argue that top management support can be “particularly relevant in SMEs due to their close-knit work environment” and “their high involvement in SME routines, besides their direct influence on resource allocation and informal communication” (Snider *et al.*, 2009, p. 18). SMEs tend to have low levels of organizational hierarchy where the CEO, in addition to leading the company strategically, is also involved in operational decisions (Huin, 2004; Levy and Powell, 2000). This means that for example the CEO could be both the driver of the ERP project and also a member of the project team thus strongly affecting the outcome (Huin, 2004).

Gable and Stewart (1999) further note that CEO dominance is a common characteristic for SMEs and that this can positively influence the ERP implementation project by allowing top management to have broader control. They also pointed out that it can have negative effects, however, as the CEO might have difficulties in delegating responsibility and sharing information.

Snider *et al.* (2009) suggest that top management can affect the outcome of the ERP project particularly by making sure to provide the necessary financial support for quality consulting and training. “SMEs typically lacked technical expertise, thus the importance of such funding became clear.” (Snider *et al.*, 2009, p. 19). Similarly, Upadhyay *et al.* (2011) argue that top management in SMEs is often expecting a fast return on investment and is therefore reluctant to allocate extra resources on for example training, which can result in failure.

In addition, it is up to top management to decide to what extent project team members are freed from normal responsibilities during the implementation project (Snider *et al.*, 2009). The authors noted that this could encourage the team members although they were just temporarily relieved from their normal

duties at the start of the implementation since “team members were still positively impacted by management’s sheer gesture to support their time in the project, regardless of the actual results.” (Snider *et al.*, 2009, 19).

Top management also plays an important role in facilitating the often-necessary change that comes with an ERP implementation (Argyropoulou *et al.*, 2007). Xu *et al.* (2011, p. 294) wrote that top management in SMEs “play a critical role in setting the tone from the top for a new system”. Top management can similarly also damage the implementation project by not realizing that the adoption will require restructuring (Levy and Powell, 2000), or simply by their unwillingness to change their way of doing business (Dixit and Prakash, 2011; Metaxiotis, 2011). This will be further discussed under the CSF *change management*.

Shaul and Tauber (2012) argue that a good way of ensuring top management support in SMEs is to appoint someone from the executive level, for example the CEO, as the project champion. Similarly, Eshelman *et al.* (2001, p. 31) found that “Having the CEO as project co-leader proved valuable in maintaining open communications with top management”. For a summary of top management as a CSF, see Table 2.

SME property	Components
CEO dominance and involvement in operational activities	<p>Top management support is crucial in SMEs due to their high involvement in both strategic and operational decisions and can in many ways either positively or negatively influence the outcome (Huin 2004; Snider <i>et al.</i> 2009)</p> <p>Top management need to “set the tone” (Xu <i>et al.</i>, 2011)</p> <p>Having the CEO as a project champion is a good way of ensuring management support (Shaul and Tauber, 2012)</p>
Lack of resources and IT-skills	<p>Top management in SMEs can harm the project by not allocating sufficient resources for training etc. (Snider <i>et al.</i>, 2009; Upadhyay <i>et al.</i>, 2011) or by failing to realize that the adoption will require restructuring (Levy and Powell, 2000).</p>

Table 2. Components of top management support as a CSF and the related SME properties.

3.2.2 The project team

In addition to appointing an appropriate project champion, the right project team must also be assigned, with the team composition and involvement being crucial factors for success (Soja, 2006). The team further needs to have a good project leader and the have right mix of internal staff and external consultants

(Doom *et al.*, 2010) and have an appropriate team structure (Malhotra and Temponi, 2010), see Table 3.

SMEs typically lack human resources and can thus not fully dedicate a team for an ERP implementation project, which is suggested to be important in order to achieve a successful outcome of an ERP implementation project (Shanks *et al.*, 2000; Mabert *et al.*, 2003b; Umble *et al.*, 2003). As a solution to this, Malhotra and Temponi (2010) suggest a heavyweight team structure where the team members can work part-time with the project.

In support of this, Snider *et al.* (2009) noted that the project teams in the SMEs they studied were not dedicated full-time to the project, and neither did they find that it had a negative impact on the outcome. Snider *et al.* (2009, p. 20) argue that this might be due to the “‘hard-working’ culture of the SMEs, as employees were expected to be flexible and take on additional responsibilities as needed.” This is consistent with the case studied by Eshelman *et al.* (2000), where employees that were largely involved in the implementation project were expected to work the double amount during the implementation period in order to not fall behind with their normal duties.

The heavyweight team structure furthermore allows the project manager to also be the project champion, something that is possible because of the low levels of organizational hierarchy in SMEs (Malhotra and Temponi, 2010). The authors mean that this is a flexible solution that would not be possible in larger organizations where managers often have very clear responsibilities. This can in turn add complexity and conflict to the implementation project that smaller companies are relieved from (Malhotra and Temponi, 2010).

SME property	Components
Lack of human and financial resources	<p>A fully dedicated team not a CSF for SMEs (Snider <i>et al.</i>, 2009)</p> <p>A heavyweight team structure allows the team members to work part time and keep up with operational activities (Malhotra and Temponi, 2010)</p> <p>It might be necessary for employees to work overtime during the implementation project (Eshelman <i>et al.</i>, 2000; Snider <i>et al.</i>, 2009).</p>
Lack of IT-skills	A good mix between internal staff and consultants (Doom <i>et al.</i> 2010)

Table 3. Components of the project team as a CSF and the related SME properties

To complement the project team in areas where the team is missing expertise knowledge, the relationship between the company and the vendor and/or external consultants is crucial for SMEs since they often lack technical knowledge themselves (Snider *et al.*, 2009). This will be discussed further in the section *Vendors and Consultants*.

3.2.3 Project management

Upadhyay *et al.* (2011) argue that project execution competency is one of the most important factors in order achieve a positive outcome of an ERP implementation (see table 4).

This might be a particularly important factor for SMEs as effective project management can be hard to find in SMEs (Buonanno *et al.* (2005), and they also tend to have little experience from implementation projects of IT-systems in general (Zach, 2010). Furthermore, SMEs often have a more individualistic managerial ideology and are thus “less likely to follow ‘normative’ models of good implementation practice” (Gable and Stewart, 1999, p. 780). Similarly, Argyropoulou *et al.* (2007, p. 406) argue that SMEs “do not follow a structured methodology for ERP system implementation”.

Snider *et al.* (2009) mean that the use of external consultants to lead the implementation project can help, as they often have more experience with project management. The authors furthermore underline the importance of project documentation as project team members in SMEs often have to complete day-to-day activities in parallel with the implementation project, meaning they might give necessary project documentation a low priority.

SME property	Components
Lack of managerial and IT skills	<p>External consultants can be a good project leader since they have more experience with project management (Snider <i>et al.</i>, 2009)</p> <p>Important to develop effective communication and team building skills as SMEs cannot afford time overruns (Muscatello <i>et al.</i>, 2003)</p>
Lack of human resources	<p>Important to make time for project documentation, which might get low priority in SMEs where project team members also have to complete day-to-day tasks (Snider <i>et al.</i>, 2009)</p>

Table 4. Components of project management as a CSF and related SME properties.

3.2.4 Strategic planning and alignment of ERP investment

Muscatello *et al.* (2003) and Soja (2006) found ERP implementation success to be strongly related to linking the ERP investment with strategy and Doom *et al.* (2010, p. 394) similarly found that “a clear vision of the strategic goals of ERP implementation” is one of the most important CSFs for SMEs (see table 5).

Malhotra and Temponi (2010) similarly argue that it is critical to articulate the vision of the ERP implementation and that it is important that everyone in the company understands why an ERP system is being implemented. They further point out that top management need to communicate this, and that it is an important part of managing change among the employees.

Such strategic linking of the ERP investment can, however, be hard to achieve in SMEs. As SMEs often have a short-term focus on surviving, long-term strategic planning often gets a lower priority (Sharma, 2011) and there is often a lack of strategic planning of IT-systems (Buonanno *et. al.*, 2005). When SMEs choose to implement an ERP system it is, according to Argyropoulou *et al.* (2007, p. 422), often done as a “reaction to competition”, while larger companies normally make a more informed decision, weighting also other benefits. Similarly, Malhotra and Temponi (2010) suggest that some SMEs choose ERP system based on cost rather than on strategic suitability.

SME property	Components
Less long-term strategic planning	Successful implementation strongly related to linking the investment to strategic planning (Muscatello <i>et al.</i> , 2003, Soja, 2006) Important that everybody understands why an ERP system is being implemented (Malhotra and Temponi) Formal strategy not as important in SME, either due to implicit strategy or inexistent strategy (Snider <i>et al.</i> , 2009)
Less strategic IT-planning	ERP investment often done as a “reaction to competition” (Argyropoulou <i>et al.</i> , 2007, p. 422) SMEs choose ERP system based on cost rather than one that would be strategically suitable (Malhotra and Temponi, 2010)

Table 5. Components of strategic planning as a CSF and related SME properties.

Laukkanen *et al.* (2007, p. 328) found partial support for this, but also noted that “medium-sized companies emphasize the more strategic business development objectives of ERP adoption significantly more than the small companies.”

Snider *et al.* (2009, p. 22), on the other hand, did not find it to be a CSF to have a formal strategy and had two explanations for this:

“First, legacy systems might be so inadequate that improvements were obtained despite the strategic alignment. Second, SME staff might be tacitly aware of the strategic vision to incorporate this vision into project plans.”

3.2.5 Business Process Change and ERP fit

Business process change is a debated and controversial CSF in ERP implementations (see table 6). This CSF relates to whether business processes should be adjusted to suit the ERP system, or if the ERP system should be customized to suit the current business processes.

Quiscenti *et al.* (2006, p. 3802) note that some process change normally is necessary “so that enterprise processes can be adapted to those built within the ERP system.” In addition, Snider *et al.* (2009) point out that it can be difficult for companies that do not have process discipline before the implementation to start working according to the rigid and standardized processes that an ERP system require, and that some restructuring might therefore be necessary. This is in line with Huin’s (2004) remark that SMEs with their informal ways need to consider the formality and structure that an ERP system brings.

Ravarini, Tagliavini, Pigni, & Sciuto (2000), on the other hand, suggest that SMEs are often lacking both resources and experience with process design and reengineering and that “it could be worth taking into account a simpler and less radical approach that considers BPR merely a possible activity, following the implementation of an ERP system.” Quiscenti (2006) also note that changing the business processes could possibly harm SMEs ability to be flexible and survive and therefore suggest that the ERP system should be configured to suit the needs of the company.

Malhotra and Temponi (2010) point out that a system that fits well and requires minimal customization decreases the need for ongoing support, which should be particularly important for SMEs that might not have sufficient resources to support the system after it is implemented (Argyropoulou *et al.*, 2008). Shaul and Tauber (2012, p. 379) found a poor fit between the ERP system and several of

the companies they studied, which resulted in “more software process customization, more cycles of re-implementation, greater complexity, increases in resources and longer project schedule”.

Federici (2009, p. 94) found that one of the factors that influences the outcome of an ERP implementation the most is to use a small, national ERP producer as they “seem to fit better the needs and culture of SMEs.”

SME property	Components
Lack of resources and experience with process design	Start with a less radical approach and consider BPR after the implementation of the system (Ravarini <i>et al.</i> , 2000)
Lack of process discipline and informal ways of working	It might be difficult to start working according to the formal and standardized ways that an ERP system requires (Huin 2004; Snider <i>et al.</i> , 2009). Some restructuring might be necessary in order to fit with the processes built into the system, although this might also harm the company's flexibility and the system should therefore be configured to suit the company (Quiscenti <i>et al.</i> , 2006).
Lack of resources	A system that fits well decreases the need for ongoing support once it has been implemented (Malhotra and Temponi, 2010). A poor fit results in a more complex implementation that usually takes longer (Shaul and Tauber, 2012).

Table 6. Components of business process change as a CSF and related SME properties.

3.2.6 Change management

Regardless of choosing to redesign processes or not when implementing an ERP system, some change will normally be necessary. Resistance to change is evident in most change projects, no matter the nature of the project. This is equally true in ERP implementation projects (see table 7). There are, however, findings that indicate that the efforts required in change management are often heavily underestimated (Grover, 1995).

In support of this, some researcher argue that SMEs do not seem to realize that IT adoption might require changes both to the organization and to management structures (Levy and Powell, 2000; Buonanno *et al.*, 2005), while others argue that SMEs might simply be unwilling to change their corporate culture and their way of doing business to achieve a better fit with the ERP system (Dixit and Prakash, 2011; Metaxiotis, 2011).

Argyropoulou *et al.* (2007), on the other hand, argue that organizational change

might in fact be easier in smaller organizations as there is less resistance to change. This is related to the low levels of hierarchy and top management involvement in the implementation process, with their commitment, participation and clear communication of goals leading to a reduced resistance to change. Thus, if the CEO and top management works in a proactive way to facilitate change it can be done easier than in larger corporations, despite SMEs lack of knowledge about techniques such as BPR (Argyropoulou *et al.*, 2008). Also Laukkanen *et al.* (2007) found that larger companies saw the changes brought by the ERP system as more of a risk factor than the smaller companies.

Shaul and Tauber (2012, p. 371) note that when it comes to change management it should be done by involving top management “rather than relying on the vendors’ or consultants efforts to overcome resistance”. Shaul and Tauber (2012, p. 379) pointed out that resistance to change was successfully handled by “establish a change management team and program made up of top and project management”.

The authors further state that a project champion of executive level is important, since “he or she can make sound decisions, mediate, overrule, resolve conflicts, appoint open minded figures and import adequate practices and approaches” (Shaul and Tauber, 2012, p. 371). This is consistent with the findings of Basu *et al.* (2011, p. 96) who state that the project champion must “have the power to set goals and to introduce legitimate changes”.

Malhotra and Temponi (2012, p. 34) also discuss the need to manage the resistance towards change and that it can either be easier or harder in SMEs and that this is especially significant when the SME is located in a small town:

Once management gets buy-in from people considered ‘leaders’ within the town, a quicker and easier implementation is expected as you leverage on these leaders’ powers and insights. On the other hand, if management alienates these ‘leaders’, the situation has the opposite effect.

The authors mean that the solution to this is clear communication of goals and benefits with the ERP system and also to appoint a heavyweight team leader that can resolve conflicts quickly.

SME property	Components
Low levels of hierarchy	<p>Top management commitment, participation and clear communication can facilitate change (Argyropoulou <i>et al.</i>, 2007)</p> <p>Top management can facilitate change by taking an active role in change management, preferably by appointing someone from top management as project champion (Shaul and Tauber, 2012)</p> <p>Important to identify those among the employees that have the “power” and make sure to get their support for the project (Malhotra and Temponi, 2010)</p>
Unawareness or unwillingness to change	<p>SMEs do not realize that an ERP implementation requires restructuring (Buonanno <i>et al.</i>, 2003; Levy and Powell, 2000)</p> <p>SMEs are unwilling to change their corporate culture or their way of doing business (Dixit and Prakash, 2011; Metaxiotis, 2011).</p>

Table 7. Research findings on change management as a CSF and related SME properties

3.2.7 Vendors and consultants

The role of vendors and consultants is usually critical in SMEs since they lack the necessary knowledge and IT-expertise themselves (Adam and O’Doherty, 2000, Doom *et al.*, 2010, Buonanno *et al.*, 2005). Snider *et al.* wrote:

Project success appeared to be directly associated with the quality of the consultant. For example, interviewees stated that project teams relied heavily on external consultants because project teams lacked software expertise and time.

In support of this, Soja (2006) found that implementation experience was the most important factor for success in small companies. Similarly, Adam and O’Doherty (2000) wrote:

Finally, this study indicates the importance of having experienced implementing partners in ERP projects. The implementation of the software can be sped up and, more importantly, the post-implementation disillusionment experienced by many companies can be shortened and diminished.

However, SMEs often have, as previously noted, limited resources and are therefore less likely to have the resources to pay for such consultancy services (Snider *et al.*, 2009). Upadhyay *et al.* (2011) found that many SMEs chose vendors based on cost rather than competence, which resulted in failure, and the authors state that it is crucial with vendor fit and compatibility in order for the project to succeed. Similarly, Snider *et al.* (2009, p. 19) noted that top management in one of the companies they studied tried to cut costs for

consultancy services and “hired a lower cost independent consultant that had minimal experience with the new ERP system”. This turned out to negatively affect the outcome and it was a decision that the company admittedly regretted when looking back (see table 9).

External consultants can further make a big difference when it comes to educating the users (see table 10). Snider *et al.* (2009, p. 16) found external end-user training to be a very important in SMEs as “Internal project teams often lack time and skills to preparing and delivering effective training sessions”. Also Shaul and Tauber (2012) found that external expertise should be used for training, as there is often a lack of experience for this in-house.

SME property	Components
Lack of IT skills	Makes the role of consultants and vendors crucial (Adam and O'Doherty, 2000, Doom <i>et al.</i> , 2010, Buonanno <i>et al.</i> , 2005) The quality and experience of the consultant is closely connected to the success of the project (Adam and O'Doherty, 2000: Snider <i>et al.</i> , 2009).
Lack of resources	SMEs are less likely to have resources to pay for such consultancy services (Snider <i>et al.</i> , 2009). SMEs tend to choose vendor based on cost rather than competency (Snider <i>et al.</i> , 2009; Upadhyay <i>et al.</i> , 2011)
Internal team lacks time, skills and experience for training	Important with external end-user training (Shaul and Tauber, 2012; Snider <i>et al.</i> , 2009)

Table 9. Components of vendors and consultants as a CSF and related SME properties

3.2.8 Communication

Communication is normally considered critical in order for projects of any kind to succeed, and it is thus no surprise that it is considered to be a CSF also for ERP implementation (see table 11).

Upadhyay *et al.* (2011, p. 142) argue that effective communication is crucial and that it is important not to “ignore aspects like establishing proper communication channel amongst all stakeholders involved in the implementation.”

Malhotra and Temponi (2010, p. 35) suggest that the project manager need to communicate in order to “Set proper expectations and address user concerns in a timely fashion” and furthermore that top management need to communicate that they were the ones to initiated the project and why.

The findings of Snider *et al.* (2009, p. 21), on the other hand, oppose this since “All the successful cases appeared to place minimal or not effort towards formal communication, but no implementation challenges could be directly associated with that decision”.

SME property	Components
Low levels of hierarchy Blurred departmental walls	<p>Effective communication between all stakeholders very important (Upadhyay <i>et al.</i>, 2011)</p> <p>Project manager should communicate the expectations and address user concerns (Malhotra and Temponi, 2010)</p> <p>Important that top management communicate that they were the ones to initiate the project and why (Malhotra and Temponi, 2010).</p> <p>Formal communication not a CSF in SMEs (Snider <i>et al.</i>, 2009).</p>

Table 11. Research findings on change management as a CSF and related SME properties

3.3 CSFs for International ERP implementations

When multiple locations are involved (with different managerial reporting lines, languages spoken and national cultures), managing a multisite ERP implementation project is challenging at best (Markus et al., 2000: p. 46)

The improved integration of the entire organization has made ERP systems attractive to global companies in supporting their global operations (Hawking, 2000). However, as the quote above suggests, national differences in global organizations do affect the outcomes of international ERP implementation projects, (Sheu *et al.*, 2004; Yen and Sheu, 2004) and failing to recognize the impact of these factors can lead to expensive and delayed projects (Krumbholz and Maiden, 2001). National and cultural differences is however not the only factors affecting international ERP implementations, which will be discussed throughout this section.

The international dimension of global ERP implementations is implicit in many general studies on the subject of ERP implementations, but still under-researched as a specific subject and in need for more studies (Plant and Willcocks, 2007; Hawking, 2000).

There seems to be a prevailing consensus in the literature and previous studies concerning what are the general critical successes factors in ERP implementations, in contrast to the somewhat scarce suggestions to what the

CSFs for international ERP implementations are. As illustrated in *Table 12*, which summarizes the CSFs for international ERP implementations according to previous studies, researchers have come to varying conclusions regarding which are the critical success factors for international ERP implementations. These factors will be further discussed throughout the rest of this chapter.

<i>Author</i>	<i>Type of study</i>	<i>Business strategy and organizational structure</i>	<i>Culture and language</i>	<i>Management style and execution</i>	<i>Vendor and consultants</i>	<i>Regulations and legislations</i>
Sheu <i>et al.</i> (2004)	Qualitative case study (4 cases)	X	X	X		X
Zhang <i>et al.</i> (2005)	Qualitative case study (4 cases)		X		X	
Plant and Willcocks (2007)	Longitudinal case study (2 cases)				X	
Hawking (2000)	Content analysis of industry presentations (approx. 2000 presentations)		X			
Krumbholz and Maiden (2001)	Qualitative case study (1 case)		X			
Markus <i>et al.</i> (2000)	Literature/theory review	X		X		
Yen and Sheu (2003)	Qualitative case study (5 cases)		X			X
Carton and Adam (2002)	Qualitative case study (4 cases)					
Madapusi and D'Souza (2005)		X				

Table 12 - Critical Success Factors to international ERP implementations

3.3.1 Business strategy and organizational structure

Markus *et al.* (2000) have based their argumentation of what makes multisite ERP implementations successful on four major decision areas, or levels, being: *business strategy, software configuration, technology platform* and *practical execution*. Sheu *et al.* (2004) also recognize the firm's competitive environment and the business strategy as a factor likely to affect international ERP implementations, supporting the business strategy level in the framework by Markus *et al.* (2000). Software configuration and technology platform is outside the scope of this study, however practical execution will be discussed later in this chapter under the CSF *Management style and execution*.

Business strategy, being the first level of the suggested framework by Markus *et al.* (2000), in this context addresses the issue of centralized vs. decentralized relationships among business units and the suitability of an ERP system to respective organizational configuration and international business strategy. Madapusi and D'Souza (2005) similarly found that alignment between the ERP strategy and the business strategy is a critical success factor. They found that "Misalignment of a firm's global ERP system with its international strategy is one of the primary reasons for delayed or failed ERP implementations." (Madapusi and D'Souza, 2005: p. 8)

The international business strategy, in this context, can be discussed with the five structural organizational patterns suggested by Markus *et al.* (2000) which in large are also supported by Madapusi and D'Souza (2005):

- *Total local autonomy*, where subsidiaries are totally free to make decisions on their own (Markus *et al.*, 2000). Although not without positive effects such as avoiding conflicts deriving from changes promoted by headquarters, this pattern typically fails to take advantage of the full potential of ERP systems, according to Markus *et al.* (2000). Firms acting according to this pattern, but still choose to implement ERP systems might experience difficulties, as observed by Sheu *et al.* (2004: pp. 366-367): "As a result, many implementation decisions, including the selection of ERP software and other implementation practices, were largely decentralized to local facilities. Each site purchased, installed and maintained its own ERP software without consulting the other".
- *Headquarters control only at financial level* (Markus *et al.*, 2000) or *Multinational strategy* (Madapusi and D'Souza, 2005). Here, business units are left with total autonomy and are independent, but linked to a common headquarters for financial reporting. They have their own financial and operational responsibility. Typically suitable when the company offers differentiated products, aimed at local markets. (Madapusi and D'Souza, 2005; Markus *et al.*, 2000)
- *Headquarters coordination of operations* is a pattern where headquarters manages the global supply chain through local information from each site

provided by the ERP system. Still, each subsidiary has a high level of autonomy in this pattern. The pattern is best suited when there are corporate benefits from common purchasing. Headquarters play a major role in managing the ERP implementation in this pattern. (Markus *et al.*, 2000)

- *Network coordination of operations* (Markus *et al.*, 2000) or *Transnational strategy* (Madapusi and D'Souza, 2005). In this pattern, local units have access to each other's information through the ERP system (Markus *et al.*, 2000). Typically with centralized financial configuration but with multiple operations (Madapusi and D'Souza, 2005). It is a useful strategy when business units sell to each other and to external customers. Implementation projects of this kind require a great deal of cooperation between headquarters and sub-units (Markus *et al.*, 2000). Suits companies trying to achieve local differentiation of products, but with global economic efficiencies (Madapusi and D'Souza, 2005).
- *Total centralization* (Markus *et al.*, 2000) or *Global strategy* (Madapusi and D'Souza, 2005) refers to all decisions being made centrally with single and centralized financial and operational configurations (Madapusi and D'Souza, 2005; Markus *et al.*, 2000). This strategy proposes a top-down approach to ERP implementation projects and is most useful when an organization wants to communicate one common face or brand towards its customers (Markus *et al.*, 2000). Typically with product standardization and global sourcing (Madapusi and D'Souza, 2005).

According to Sheu *et al.* (2004), firms acting on a highly competitive market are more likely to, and able to adapt a more centralized pattern, such as *Total centralization*, than those acting on less competitive markets since it is considered more acceptable by subsidiaries under the external pressure from the market.

It should be pointed out here, that none of the above patterns is more correct than the others, but rather a description of the degree of centralization in an organization and how an ERP system would be best suited to the corresponding

organizational pattern. That is, having an alignment between the business strategy and the ERP strategy is important. (Madapusi and D'Souza, 2005; Markus *et al.*, 2000; Sheu *et al.*, 2004)

Sheu *et al.* (2004) observed a misalignment between the intended ERP strategy and business strategy and how this affects an ERP implementation in their study: As a part of an international ERP rollout, the case organization strove towards a very centralized and highly standardized implementation. The organization, however, eventually proved to have very dispersed business units, doing everything in their very own way, which forced the initial plan of a totally centralized ERP implementation to be altered (Sheu *et al.*, 2004).

Michael Porter (1986), one of the gurus in company strategy and global operations, classifies a number of general, non-ERP specific global strategies for companies acting on a global market. Porter (1986) also point to the importance for an international company to align its strategy with the organization.

The discussion of the different business strategies above can also be supported by Porter's (1986) global strategies, ranging from *multidomestic* to *multinational*. E.g. Porter's *multidomestic* can be compared to *total local autonomy*, where subsidiaries, or offshore operations, operate independently. The *multinationals* share similarities with *total centralization*, where standardized, global business processes are used throughout the entire organization.

Apart from the business strategy, which states the official relationship between sites, or subsidiaries, there are usually substantial cultural differences between business units as well. These cultural differences appear to be important factors in international implementations, as will be described in the following section.

3.3.2 Culture and language

In previous studies touching upon the international dimension of ERP implementations, *culture* is the most frequently discussed factor and is confirmed as a unique critical success factor by Zhang *et al.* (2005). Authors like Hawking (2000); Krumbholz and Maiden (2001); Sheu *et al.* (2004); Yen and Sheu (2004); and Zhang *et al.* (2005) all discuss the impact that cultural differences have on international ERP implementation projects. Influential

authors like Hofstede and Hofstede (2005) can be seen as supporting this and describes the impact that cultural dimensions have on organizations and how this can affect international change projects in more general terms.

Hawking (2000) for example, exemplifies cultural differences with something as simple as the perceived meaning of the word “yes”: In many Asian cultures, the word is not necessarily a confirmation of understanding or a positive agreement, as compared to being the implicit meaning of it in most western countries. (Hawking, 2000)

The *language* difference, which is closely related to the cultural dimension in international ERP implementations and treated under the same CSF in this study, can provide both technical and managerial difficulties (Sheu *et al.*, 2004). However, as stated previously, the main difficulties associated with ERP projects are not technical (which are outside the scope of this study anyway), but rather associated with organizational change and soft aspects (Carton and Adam, 2003), i.e. managerial aspects.

The strategic centralization issue discussed by Markus *et al.* (2000) and Madapusi and D’Souza (2005) previously is also discussed by Sheu *et al.* (2004) from a cultural issues perspective. Centralizing international ERP implementations has proved difficult, partly due to cultural differences: Sheu *et al.* (2004) identified strong resistance to adopt new and standardized operating processes as a part of an international ERP implementation project in a U.S. subsidiary/Taiwan headquarter organization. For example, several U.S. employees even threatened to resign if they were forced to adapt to the culture and processes of their Taiwanese headquarter (Sheu *et al.*, 2004).

This strong cultural resistance to change was also suggested by Sheu *et al.* (2004) to have been part of the unsuccessful implementation described in the previous section, where the initial plan of having a centralized ERP implementation had to be changed due to very dispersed business units.

Furthermore, Miconnet and Alänge (1999) suggest, through their research on globalization of “best practices”, that national culture cannot be assumed to equate organizational culture. This provides difficulties when trying to

implement common process throughout an international organization (such as having a highly centralized ERP strategy), and such attempts are rarely showing satisfactory results, according to Miconnet and Alänge (1999).

Sheu *et al.* (2004) suggest that, as one step in order to address issues related to cultural differences and language barriers in international ERP implementation projects, projects should be managed by a multicultural group, reflecting the projects cultural coverage. This is mainly because people from local units prefer to communicate with people from their own country (Sheu *et al.*, 2004).

In their research, Hofstede and Hofstede (2005) have focused on the factors and dimensions that are affecting national and organizational culture. In their work, five dimensions of national culture have been identified and measured: *power distance*, *uncertainty avoidance*, *individualism*, *masculinity*, and *time orientation* (Hofstede and Hofstede, 2005).

Of these five dimensions, Hofstede and Hofstede (2005) point to the particular effect that power distance and uncertainty avoidance have on our way of thinking of organizations. Power distance describes to which extent less powerful individuals of a group accept an unequal distribution of power, such as subordinates expecting a consultative role towards their superiors and are not afraid to question their superiors (small power distance) vs. subordinates expect to be told what to do and would not question a superior (large power distance).

Uncertainty avoidance describes to which extent people are willing to accept uncertainty and ambiguity, such as acceptance of vague project descriptions (weak uncertainty avoidance) vs. demand of formal and precise descriptions (strong uncertainty avoidance). (Hofstede and Hofstede, 2005)

The dimensions of individualism and masculinity are more closely related to individuals and their personality, rather than the cultural characteristics. Furthermore, the planning and control processes in organizations are strongly affected by culture and can be paralleled to the dimensions of power distance and uncertainty avoidance since planning tries to reduce uncertainty and control is a form of power (Hofstede and Hofstede, 2005). These planning and control processes will continue to be affected by the culture of the home country of an

organization, even when a company goes international (Hofstede and Hofstede, 2005), thus affecting projects such as international ERP implementations.

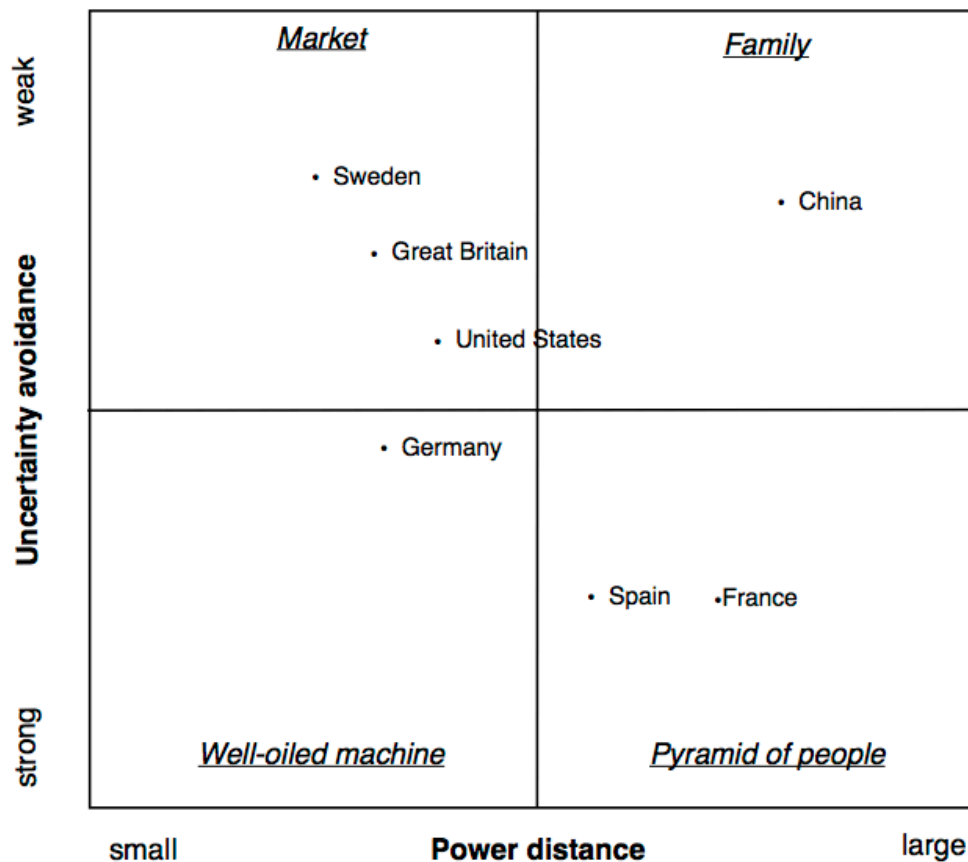


Figure 1 – Power distance vs. uncertainty avoidance and related typical national cultures (Hofstede and Hofstede, 2005).

Plotting the dimensions of power distance and uncertainty avoidance of different countries against each other in a matrix, gives a rough idea of how different cultures and countries relates to solutions of organizational problems. The quadrants correspond to different modes: *market*, *family*, *well-oiled machine* and *pyramid of people*. (Hofstede and Hofstede, 2005) Examples of typical national cultures can be seen in *Figure 1*.

3.3.3 Management style and execution

The management style in international ERP implementations projects has a direct effect on the approach and duration of the project according to Sheu *et al.*, (2004). The management style in this context refers to e.g. the choice of practical execution and resource allocation to the project. E.g. Zhang *et al.* (2005) argue

that all parts of an organization should support ERP projects and that “every person and department is responsible/accountable for the overall system and key users from different departments are ensured to commit to the project implementation without being called back to their prior functional job position frequently” (Zhang *et al.*, 2005, p. 63).

Practical execution is also the fourth level of the framework by Markus *et al.* (2000), as discussed earlier. The practical execution of an ERP implementation can either be done through a *big bang deployment* or through a *phased rollout* (Markus *et al.*, 2000). Sheu *et al.* (2004) found that big bang strategies are more common in Asian countries, whereas in US/western countries the phased rollout is more common. Furthermore Sheu *et al.* (2004) claim that implementation times tend to be shorter in Asian countries, such as Taiwan and China, compared to in most western countries. This can, according to Sheu *et al.* (2004) possibly be affected by the management style in respective country and that e.g. Taiwanese managers are more determined to complete projects in a short time.

The phased rollout is the most common strategy in international ERP rollouts, according to Carton and Adam (2003). During the phased rollout, all sites are sequentially expected to implement the system according to a common template, which is the same for all sites, no matter local differences (Carton and Adam, 2003). On the one hand, this typical strategy provides a good opportunity to review and standardize operations and business processes to align with the ERP system, which is, according to some, imperative to achieve the greatest benefits of an ERP system (Somers and Nelson, 2001). On the other hand, the process can be a nightmare to local managers, having spent years fine-tuning local operations and adapting to specific local requirements (Carton and Adam, 2003). Carton and Adam (2003) are sceptical towards this global streamlining of processes and find it “difficult to see how this upheaval can be beneficial to either local sites or the global corporation” (Carton and Adam, 2003: p. 30).

3.3.4 Vendor and consultants

In international ERP implementation projects, the client-vendor proximity is often an issue. Findings show that issues related to communication, training and education and large costs in international ERP implementations often is due to

the significant distances between the vendor/consultant and the client's subsidiaries (Sheu *et al.*, 2004; Plant and Willcocks, 2007).

Nevertheless, Sheu *et al.* (2004: p. 239) do suggest that "management should consult and negotiate with ERP software vendors prior to implementation to obtain additional help or to reduce expenses" despite the distances. Zhang *et al.* (2005) also points to the importance of the use of vendor support and external consultancy. However, no matter the skills and experience of the vendor or consultants, the management of the client company is responsible for the vendor or consultant providing the correct and continuous support, since vendor or consultant claims of previous global experience and knowledge might be exaggerated (Zhang *et al.*, 2005).

The role of vendor and consultants in the context of international implementations is closely related to education and training. Plant and Willcocks (2007) identified three issues related to education of new business routines in the context of international implementations: Firstly, a large distance between vendor's training facilities and the client's locations typically increases the costs associated to training. Secondly, when, and if, the ERP system has been customized, costs associated to training further increases due to the international context and large distances. This relates to the third issue of the client organization possibly having to develop and perform its own internal education of these customized functionalities, which is a non-core activity for the client organization, which even further increase the costs associated to training. (Plant and Willcocks, 2007)

3.3.5 Regulations and legislation

Regulations and legislations related to specific countries or regions, such as taxation, have a tendency to dramatically increase the complexity in international ERP implementation projects (Plant and Willcocks, 2007; Sheu *et al.*, 2004; Yen and Sheu, 2004). Plant and Willcocks (2007) for example describes how a Scandinavian vendor initially had difficulties capturing the complex U.S. tax systems, such as state, city and county taxes, since this differs a lot from the Scandinavian taxation system. This resulted in the vendor having to modify the system, which in turn resulted in increased costs for the client.

Another dimension of how governmental regulations and legislations can affect international ERP implementation projects is through diplomatic relationships and trade restrictions. Yen and Sheu (2004) discuss this using an example of the diplomatic relationship between Taiwan and China. At the time of publication of their article, the two countries had strict regulations on transporting goods and exchanging information between each other. To make any of these exchanges possible between subsidiaries in the two countries, a third subsidiary in a third country had to be established and used as an intermediary in all transactions. That is, information flowing through an ERP system between the two countries was not allowed. This type of issue provides obvious problems in taking full advantage of an internationally implemented ERP system and its intended integration. Companies are forced to make modifications of the ERP software, and the kind of modification required to solve the type of problem when trading between Taiwan and China is not permitted in most systems available. (Yen and Sheu, 2004)

4. Empirical findings

The empirical findings from the case studies and interviews are in this chapter presented and analysed with help from literature.

4.1 Case interviews

The three case interviews are presented in this section. The interview at ITAB (international ERP implementation) is presented first together with an analysis of this case. This is followed by the interview with Golvabia (ERP implementation in an SME) and the analysis of this case followed by Miller Graphics (international ERP implementation in an SME), and the data and analysis for that case.

4.1.1 Interview ITAB

Interview with Klas Brengesjö, CIO, ITAB.

ITAB is a Swedish manufacturing company that provides furnishing, shop fittings and overall solutions for retail chain stores. They currently have around 2000 employees and are present in most countries in central and northern Europe. They have grown by acquisition of other smaller companies around Europe in combination with organic growth.

The interview was conducted with the CIO at ITAB, who has also previously worked as an ERP consultant and therefore has good knowledge about ERP systems and implementations. He started working at ITAB in 2009 and has been a team member of the parent company's steering committee for the second wave of ERP implementations.

ITAB started implementing Jeeves, the ERP system of choice, in the parent company in 1998 when they bought "a pack of licenses" and made Jeeves their "first choice ERP" in the organization with the goal to start implementing it throughout the rest of the company. Jeeves was a natural choice since the owner of ITAB previously was on the board in Jeeves. In 2005 they started rolling out the system in Finland, England, Holland and the Czech Republic and in 2009 they continued with Denmark, Belgium, Germany and Poland.

The reasons for implementing the ERP system differed slightly between the subsidiaries. In some instances there was no adequate system in place and in other cases it was a matter of losing the license for an old ERP system when the subsidiary changed owner. ITAB has at the moment not decided whether they will implement the ERP system in more countries.

Whether the subsidiaries have the common ERP system or not depends on what kind of operation they run, e.g. production or only sales. Also, China for example has their own systems to meet the demands on legal specifications. It is possible that the ERP system will be implemented in one of the sites in China but the CIO suggested that it might prove to be very problematic, due to these legislations, among other factors.

Most implementations are considered to be successful and have in general been on time and within the budget. In a few cases, however, there were some initial problems that resulted in the implementation projects being over time and over budget. As a result of this, ITAB have experienced that top management support is absolutely crucial for ERP implementations to succeed. As an example, the CIO explains that in one of their implementations, local top management was not adequately involved and supportive of the project. This resulted in a failed ERP implementation much due to the fact that the local management was “not able to fully appreciate the efforts needed to make the new system work.” Local employees knew about the new system and they had been given basic training and education on how to use the new system. However, they were not given clear directives regarding the fact that they were actually supposed to use the new system over the old ones. This was, according to the CIO of ITAB, a result of local top management’s lack of support of the ERP project. Klas also mentions here that they as the top management team of the whole organization also has a certain degree of responsibility of ensuring the local top managers support. Since this experience, ITAB has a control function, which makes them abort or put the implementation on hold if the demanded local top management support is not achieved.

Apart from dedicated local leaders, ITAB considers the business strategy to be one of the most important factors to consider in ERP implementations. ITAB has

made the decision to not have a centralized ERP strategy but with Jeeves as "first choice ERP". On the contrary, they encourage their subsidiaries to be independent and driven by entrepreneurial values, rather than being streamlined into a global, multinational enterprise with common business processes throughout the entire organization. This is much due to the fact that the business units have rather individual and separated operations. For example, they produce varying products on the different subsidiaries.

In 18 of ITAB's subsidiaries, the same ERP system has been implemented. However, all of the subsidiaries are running their ERP system as best suited to their business processes and needs. However, Klas explains that they "do have a set of simple routines and processes that simplifies the implementation". The only processes, which ITAB demands their subsidiaries to have in common, are the ones related to financial data. This is in order for the headquarters of the organization to be able to aggregate financial data and to keep an overall control of the financial aspects of the organization. The operational routines and processes are left to the subsidiaries to setup for themselves, explains the CIO.

When it comes the rollout strategies used, the CIO's prior experiences as an ERP systems consultant comes handy. But regardless of the choice of a phased- or a big-bang-rollout, ITAB has through experiences found that the most effective execution style is to start with the sites where the implementation is most likely to succeed without difficulties. "Once the ERP system has been successfully implemented on one or a few sites, these implementation projects are used as examples or internal benchmarking when promoting the project internally to other subsidiaries, which are more skeptical to implementing the ERP system in their organization."

ITAB has found other advantages of this execution style as well: When starting to implement at those sites, which provides the least difficulties, the internal experience is increased, which makes implementation at the more complicated sites less troublesome.

On cultural differences in relation to international ERP implementations, the CIO explains that they have encountered e.g. differences in the perceived meaning of "yes": It is not necessarily a positive verification or a confirmation of a person

having things under control in the exact same way in all cultures. They have noticed that people often seem to try to make it appear as if they have things under control and understand the situation even if they do not, probably since they do not want to look bad in front of the person asking, which is most often a person of higher rank. This has led to some minor difficulties for ITAB during implementations in some countries.

Furthermore, the CIO has experienced that Scandinavians are not as avoiding of discussing an issue with their superiors as employees in other cultures. That is, in e.g. an ERP implementation project, a Swede would have less difficulties telling his or her superior that things are not going as well as expected or that he or she have actually not understood an issue, as an employee in e.g. China most likely would have, he explains.

To overcome many of the difficulties, which can arise from cultural differences, ITAB has found it useful to make sure that at least one member of the local ERP project group is a local which is also fluent in English as a complement to the native language.

Other differences between countries affecting ERP projects, explains the CIO, is e.g. that on the U.S. market ITAB have experienced difficulties due to the large differences in taxation system and financial systems as compared to such systems in Europe. The CIO adds: "For long, they even used cheques as an instrument of payment between companies in some situations!".

On the Chinese market, ITAB have noted that difficulties can arise from governmental restrictions and legislation of financial reporting through specific systems, which are not usually compatible with most western ERP systems. This often results in local system users of the company having to perform the same data entry at least twice. The CIO explains that this is one of the reasons for why ITAB have not yet implemented their ERP system on their Chinese subsidiaries.

Furthermore, when local employees state the local legal demands, which the ERP system must be able to manage, these are facts that thoroughly have to be verified. ITAB have experienced that local employees state which the legal demands are, when in fact they only state what they believe are legal demands or

the functionalities or functions they personally would like the system to have. A suggestion from ITAB to avoid this confusion is to always involve local auditor to verify what actually are the legal demands required from the ERP system.

4.1.2 Analysis ITAB

Researchers, vendors and consultants often advocate a standardization of business processes and a centralized ERP strategy throughout the organization in order to reap the intended benefits of a common ERP system (e.g. Snider *et al.*, 2009; Huin, 2004).

ITAB has a pronounced decentralized business strategy and still consider their ERP implementation to be generally successful. ITAB's ERP strategy is very similar to the pattern described by Markus *et al.* (2000) as *Headquarters control only at financial level* or the *Transnational strategy* described by Madapusi and D'Souza (2005) where the financial functions are kept centrally and the operational functions of the ERP system are locally adapted.

As also suggested by Markus *et al.* (2000) and Madapusi and D'Souza (2005), the ITAB case suggest that alignment between the business strategy, organizational structure and the ERP strategy, is a factor that should be considered in international ERP implementations. Thus, to successfully implement an ERP system in an international organization, the findings from the ITAB case suggest that it rather seems to be a question of the fit, or alignment, between the business strategy and the international ERP strategy, than a question of a necessary global standardization of business processes, as suggested by Snider *et al.* (2009) and Huin (2004).

Most researchers agree on the importance of the critical success factor of top management support to ERP implementations (Muscatello *et al.*, 2003; Snider *et al.*, 2009; Doom *et al.*, 2010; Kale *et al.*, 2010; Shaul and Tauber, 2012). The ITAB case gives further support to this being a critical success factor if the project is to succeed: When the ERP system was in place and the employees had been given education, the implementation failed, much due to local top managers not being supportive enough to the project. That is, the local top managers failed to drive the change.

The experience ITAB has had with cultural differences is supported by the theory of power distance and uncertainty avoidance, as described by Hofstede and Hofstede (2005). People of different cultural settings do have different approaches to their superiors and have different mindsets towards how detailed job descriptions are needed, as noted by Hofstede and Hofstede (2005). As suggested in the ITAB case, a Swede would most likely have less difficulty telling a superior that something is unclear, as well as a Swede would probably also have less problems dealing with this unclear task, than e.g. an employee in France. This is, as noted, supported by the theories of uncertainty avoidance and power distance (see Figure 1 in chapter 3.2), where these theories would predict the same result as ITAB has experienced.

The suggestion from ITAB of including at least one member of the project team who is a local, is supported by the suggestion of Sheu *et al.* (2004) who recommend that the project group should be of a multicultural composition. This is much due to the fact that local employees prefer to communicate with other individuals from the same cultural setting (Sheu *et al.*, 2004). This could also be a good way of avoiding such mistakes as experienced by both ITAB and by Hawking (2000) with the perceived meaning of the word “yes” and its apparently ambiguous usage in different cultures, since people of the same culture are less likely to misunderstand and possibly can identify when an individual actually has not understood.

A further finding from the ITAB case is the suggested rollout strategy of identifying the local sites, where the implementation is most likely to proceed without difficulties, and start with those sites. Both to gain experience of local ERP implementations, and to use them as benchmarking examples for later, more resistant, parts of the organization.

4.1.3 Interview Golvabia

Interview with Peter Albertsson, CEO, Golvabia

Golvabia is one of the leading companies in the Swedish flooring industry and produces and sells floors, tiles, and carpets. The company currently has 55 employees and is present on the Swedish and Norwegian market. Implementing

front-edge technical solutions when possible is part of the company's strategy in order to stay competitive.

Jeeves, the ERP system, was implemented a few years ago as a way of helping the company grow, for example by creating only one database and this way achieving more integration. Golvabia currently uses the ERP system for customer service and economy but has chosen other solutions for e.g. production, although the ERP system is used as a support for production by providing certain information.

The implementation was considered successful, i.e. within time and budget, but this was also due to many man-hours of overtime during the implementation. Although the implementation was judged to be successful there were a few instances of trial-and-error, for example when creating the database. Nonetheless, the CEO notes that this was a part of the learning process.

The interviewee, who was the CFO during the time of the implementation project, was the project champion and was heavily involved with implementation project. Today he has the role of CEO/CIO and is the "super user" at the company and spends time every day on the system, trying to find new ways to take advantage of it.

A factor that was judged critical for the successful outcome was for top management to drive the implementation project as they have broad control and "a helicopter view of the business". The interviewee noted that he had been working at the company as a CFO for a few years when the system was being implemented and thus had a very deep and broad knowledge about the company and its processes. He judged this to be very important in order to put the system to good use and "not implement sub-optimal solutions". He also noted, however, that the risk with having a broad control is to be the only one to have all the information, making everybody else at the company very dependent on you to acquire information.

Another critical factor was judged to be the involvement of everyone in the company. Instead of outsourcing the input of data into the new system to consultants, the employees at the company all had to help with this and this way

got a basic understanding of the system and “a “feel for the system”. This approach does, however, require a lot of overtime and Peter noted that there needs to be a lot of will and also a certain level of competence in the company for this to succeed. Peter spent whole days as well as nights during the implementation project and noted that without all these hours of overtime the project would most likely have been a very lengthy process.

To have a consultant that is “really engaged in the project and hungry” was pointed out as another critical factor. The consultant that Golvabia used was also located in the same city, which meant that the consultant could come over and discuss problems face-to-face and help with technical issues. This close contact was judged to be very important and far superior to getting telephone support from someone at a remote location. Peter pointed out that for complex project such as an ERP implementation it is crucial to be able to discuss problems face-to-face.

Communication with the consultants has been frequent also after the implementation as there is no specific IT-function in Golvabia. This continued cooperation and the ability to get the help, from the same consultant as the one who implemented the system, has been very important as well.

Change management was also an important part of the implementation project. The CEO notes that it is very important to “be perceptive and listen to people and their ideas” but still not let them make the decisions. There has to be a clear decision and a directive that the system is to be implemented and why. The staff was continuously informed about the project and its process. Peter furthermore advocates “management by walking around” and was this way able to let everybody voice their opinion and identify possible problems during the implementation process.

He further notes that you “need to know who is in ‘power’ among the employees” and always talk to these people personally and listen to what they have to say. Once these people are positive it is easier to the rest of the employees on board.

Finally, Peter notes that it is important to try to learn a lot about the system and to build up the competence for the system in the company. Although the help

from consultants is necessary sometimes, they tried to first solve problems internally at the company and in this way both save money and learn more about the system.

4.1.4 Analysis Golvabia

As indicated in literature, Golvabia implemented an ERP system in order to help them grow and integrate some parts of the business. The decision could be seen as a strategic investment, rather than a “reaction to competition” (Argyropoulou *et al.* 2007, p. 422). To link the investment with strategy is considered to be one of the critical factors in ERP implementation and one that is often missing in SMEs (Buonanno *et. al.*, 2005; Sharma, 2011). Perhaps because it is part of the companies strategy to implement technical solutions that can bring them forward, the ERP implementation was seen part of this. Nonetheless, it is hard to say whether this affected the outcome of the implementation.

The implementation was considered successful, but similar to what was noted by Snider *et al.* (2009) and Eshelman *et al.* (2001), this required hard work from everyone in the company and employees that were willing to work overtime. Without all the overtime and devotion of the employees it might, as suggested by Snider *et al.* (2009), be hard to implement a system successfully as there is no staff to take on additional tasks, meaning that operational activities might have to stop during the implementation.

Interestingly, everyone had to help with data input and this way were acquainted with the system. This seems to be a good example of heavy user involvement, which by several authors was suggested to be critical (Basu *et al.*, 2011; Doom *et al.*, 2010; Kale *et al.*, 2010). It is also a solution that would probably not be possible in a larger company, as it would be very difficult to coordinate and administrate such an implementation.

Top management was heavily involved in the project and the interviewee could be seen as both the project leader and project champion, which according to Malhotra and Temponi (2010) is a very flexible solution. The heavy involvement of top management could also work as encouragement to the employees who are

involved in the project (Snider *et al.*, 2009) and as a way of implying the importance of the project to the employees (Xu *et al.*, 2011).

The CEO also meant that broad control and a helicopter view was a critical factor for the success of the project. Often it is top management that has this kind of knowledge, which further speaks for heavy involvement of top management throughout the implementation process.

As highlighted in the literature, the help and involvement of consultants was judged to be critical for project success (Adam and O'Doherty, 2000, Doom *et al.*, 2010, Buonanno *et al.*, 2005). In the case of Golvabia, the vendor/consultant was chosen based on proximity and interest in the project, which has not been identified as a critical factor in any of the studies. Choosing vendor and consultant based on fit and compatibility (Upadhyay *et al.*, 2011) and quality and competence (Snider *et al.*, 2009) rather than cost are however pointed out as critical factors and a large involvement and large interest in the success of the implementation from the part of the consultant could perhaps be seen as both good compatibility and quality.

In support of Adam and O'Doherty (2000) close vendor cooperation also post-implementation was judged very important at Golvabia as there is no person dedicated to IT-support in-house.

When it comes to change management the CEO pointed out a critical factor similar to one highlighted by Malhotra and Temponi (2010), which was the importance of identifying those people in the company who has got "the power" and make sure to get these people on board. Without these people's buy in it can be hard to convince the rest of the employees.

Another important factor was to actively listen and be perceptive of the employee's opinions, which is in accordance with Upadhyay *et al.* (2011) remark about the importance of effective communication among all stakeholders. Also Malhotra and Temponi (2010) stated the importance of setting appropriate expectations and letting the users voice their concerns, which was done as Peter continuously kept a dialog with all the employees at the company. This was also

a way of informing and making the employees understand why an ERP system was being implemented (Malhotra and Temponi, 2010).

All in all, the communication, commitment and participation from top management, which by large was possible due to the low levels of hierarchy and the few number of employees, seem to have facilitated change as was suggested by Argyropoulou *et al.* (2007).

The importance of communication contrasts with Snider's *et al.* (2009) findings that formal communication is not important for project success. In partial support of Snider *et al.* (2009), however, a lot of the communication at Golvabia seem to by large have travelled through informal ways, e.g. from "management by walking around".

4.1.5 Interview Miller Graphics

Interview with Jenni van Speijk - Group Business Controller, Miller Graphics; and Sven Wigh - Senior Consultant, Ninetech.

Miller Graphics Group is a supplier of various solutions to the printing- and graphical-industry. The company is a graphical production company founded in Sweden in the early 1930's.

Miller Graphics operations and market-presence stretches across most of Europe, with subsidiaries and sub-divisions in Sweden, Finland, United Kingdom, France, Belgium, Holland, Poland, and Morocco. As of September 2012, the group consist of about 400 employees divided over the eight countries.

In the increasingly international organization, the top management at the Swedish group headquarters have experienced difficulties related to a lack of common routines for financial reporting, which is also one of the main reasons for the implementation of an ERP system covering the entire company group. This is consequently also one of the areas of which Miller Graphics is expecting improvements, since aggregated financial data are expected to be available to the top management on request via the ERP system. Previously, the headquarters have relied on subsidiaries to send in financial reports and associated data upon request. Jenni comments on this: "It is working, but with one common system it's easier to communicate what we are asking for to be really sure that we get the

same information from all. We can also on group level run reports directly in the system."

In relation to the international ERP implementation, Miller Graphics has chosen to redesign and centralize most of their business processes for the entire group, in order to align with the ERP system and due to their long-term strategy to centralize the group. Thus, all subsidiaries are expected to follow a common model for how to use and implement the ERP system, and also how to set up their business processes. An important aspect of succeeding with this strategy for Miller Graphics, has been to have very clear directives from the highest possible authority in the company group. As Jenny explains: "Previously everyone in the group has had the possibility to act however they found most suitable to them, and now we move towards having everyone doing things more the same way. When we chose to implement a common system, we also decided to communicate that 'this is the way we have chosen and there are no alternatives at this point'".

Jenni and Sven both believe that most organizations do not have such large differences between their subsidiaries that they cannot adapt to a centralized ERP strategy, and if they did differ to such extent, most of the potential benefits of implementing an ERP system, are lost anyway.

At the time of the interview (September 7, 2012) the ERP system had been implemented in the Swedish part of the organization, but the international rollout was soon to be completed and the planning- and preparation-process was well underway. Miller Graphics, so far, considers the implementation successful: The project is following the time frame and the expected benefits are starting to show.

From this preparation process, Miller Graphics have experienced that a crucial factor to succeed is to have highly dedicated local project leaders, who can also serve as super users later on. For the international implementation, Miller Graphics has demanded to have the local CEO's involved in the early planning phases and thus gain their support of the project. Sven also commented on the importance of having dedicated leaders, both locally and centrally in the organization.

Furthermore, Miller Graphics have experienced that the units of the international organization where the very most dedicated and enthusiastic project leaders to the upcoming ERP implementation is found, is preferably also the sites to start the implementation with. It is most likely also on these sites, where the implementation will proceed with the least difficulties. Miller Graphics has found that these sites can fill the purpose of internal benchmarking when the implementation moves on to the more troublesome and resisting units of the organization.

Relating to these sites where higher levels of resistance have been encountered, Jenni believes that it is more of a question of personal and individual differences than it is a question of cultural differences. "There are better and worse sites, but in the end it's about the individuals involved" as Jenni explained. She explains that from their experiences, the necessary levels of clear and detailed instructions is depending more on the individual than on the local culture.

A benefit, which Miller Graphics has experienced as a result of the common ERP system, is a sharing of knowledge and competences, previously only benefited from at local levels, Jenni explains: "On two or three subsidiaries, we have employees, who are extremely skilled at aggregating and summarizing data and information from different sources. This is something that we now can take advantage of in the whole group instead of, as previously, only on those local sites."

The partner consultancy company, Ninetech, was responsible for the initial training and education. Once the basic training and education was completed with key project leaders in Sweden, Miller Graphics developed their own internal training program. This program was later the one being used to train and educate the rest of the organization in the other countries. According to Jenni, this has worked very well, especially since the ones educating internally, know the company and the processes much better than an external consultant ever could, and thus can exemplify and put things in a concrete context. Furthermore, Jenni emphasise the importance of practical, hands-on training rather than classroom education.

The support function has been developed similarly: Ninetech is responsible for the support towards the Swedish headquarters, and they have also created an internal support, consisting of one fulltime employee.

4.1.6 Analysis Miller Graphics

Maintaining control of the increasingly international organization has proven difficult for Miller Graphics when there is a lack of centralization and unity. Much because of this growing problem, the company did not have any second thoughts on accepting the process standardization and centralization, which was suggested to precede, and accompany, the ERP implementation by the consultancy- and vendor-partner.

The implementation is so far considered successful by Miller Graphics, and since the company has a pronounced strategy of centralizing their company group, the ERP strategy chosen appears to align well with the business strategy. The alignment of the business strategy and the ERP strategy, of which the latter in Miller Graphics' case can be compared to *Total centralization* (Markus *et al.*, 2000) or *Global strategy* (Madapusi and D'Souza, 2005), seems to be of great importance to successful international ERP implementations as suggested by Madapusi and D'Souza (2005) and Markus *et al.* (2000).

Miller Graphics, and Jenni, just like an extensive list of researchers, such as Holland and Light (1999); Jarrar *et al.* (2000); Somers and Nelson (2001); Umble *et al.* (2003); Soja (2006); Finney and Corbett (2007); Hawking (2007), have experienced the importance of top management support to successfully implement an ERP system. And more specifically, Miller Graphics has noted the importance of having local top management support when implementing an ERP system in an international organization.

A demand from Miller Graphics' headquarters was that the local CEO's should be a part of the early planning process and that they were involved and dedicated to the ERP implementation. By setting this demand, the necessary top management support was established and this could be one of the reasons for why the implementation so far has been successful.

In terms of change management and dealing with the resistance to change, Miller Graphics appears to have, even though adapting a rather harsh top-down approach succeeded to get the necessary dedication from local top managers. A way of doing this seems to have been to include the local top managers in the project planning, as suggested by Shaul and Tauber (2012), as well as the clear communication about the upcoming ERP implementation.

The fact that top management commitment was achieved also on a local level, might have helped reduce the resistance to change as also suggested by Shaul and Tauber (2012).

Furthermore, the strategy to start with the sites where the implementation was most likely to succeed, and later use these as internal benchmarking, is likely to have decreased the resistance to change since it enables the resisters to observe the intended outcome and benefits on another unit within the same organization.

The successful results from having developed internal education- and training-programmes is interesting, especially when put in the light of the suggestions of Snider *et al.* (2009) and Shaul and Tauber (2012), of how internal project teams in SMEs often lack the time and skills needed for developing and delivering internal training. This could, however, simply imply that the specific skills needed to develop an internal training-program are available at the Graphics group headquarters. To challenge the suggestions of Snider *et al.* (2009) and Shaul and Tauber (2012), further empirical studies of successful internal training programmes in ERP projects would be necessary.

However, the development of internal training programmes could be a suggestion for how to solve the often-found problems related to large distances when consultants are responsible for the training and education in international ERP projects (Sheu *et al.*, 2004; Plant and Willcocks, 2007). It could for example minimize the costs associated to training in international ERP projects and it could make the training more specific to the company context.

The findings from the Miller Graphics case highlight the influence of individual and personal differences as a complement to the influences of cultural differences. Hofstede and Hofstede (2005) as well as Sheu *et al.* (2004) have

focused their studies on cultural differences and its effect on change projects and the latter more specifically on international ERP implementations.

The Miller Graphics case reminds us of the fact that organizations are composed of individuals and not purely cultural clusters of people. Hofstede and Hofstede's (2005) research and framework have received much recognition and could be a good starting point when planning an international change project. It can be a suitable tool for creating directed change or implementation strategies for clusters of countries. However, when looking to identify key super users, or the previously requested sites where the implementation most likely will proceed the smoothest, it appears as if individuals driving forces are more important to consider than cultural setting.

A further finding from the Miller Graphics case is the one related to the sharing of competence and knowledge through the ERP system, which was previously only available to the local sites where the competence was located. The fact that on these few sites, a couple of highly skilled individuals were supporting the local organization in a way that the entire company group would come to benefit from, due to the implementation of the ERP system, is indeed an interesting finding.

This is a good example of unexpected benefits, which an international organization might experience from implementing a common ERP system in an international organization.

4.2 Consultancy company interviews

The two consultancy interviews are presented in this section. The data from the interview with the Jeeves consultant Johan together with an analysis of this interview is followed by data from the interview with Charlotta Sundqvist, management consultant at Ekan and an analysis of this.

4.2.1 Interview Jeeves consultant

Interview with Johan Lindgren, Application Area Manager and consultant at Jeeves

Johan Lindgren has worked at Jeeves as a consultant for 1,5 years and has to a large extent worked with international rollouts. He has been part of a project group that has implemented Jeeves on numerous locations all over the world.

Johan notes that first of all, it is key to realize that people and psychology plays a major role in ERP implementations, and that it all comes down to the people who are involved and affected by the implementation. According to Johan an ERP implementation is “90 % psychology and 10 % technique” and the personality of the people involved plays a major role.

He gives an example of this from an implementation done in Belgium, which was one of many implementations done as part of an international rollout of Jeeves for a Swedish company. The implementation in Belgium was done by the same project group (of which Johan was a member), used the same project model and the same ERP system, and still it was not successful in Belgium. In this case the local CEO was so dominant that the project group did not get a chance to interact with the people who were actually going to use the system. Normally the project group try to address one person per function who will use the system, e.g. someone from the warehouse, someone from finance and so on, but were not able to do so in Belgium since the CEO took over all communication completely. This complicated the implementation severely and the local CEO in Belgium was finally relieved from his position and the implementation could then proceed.

Johan further states that it is vital to understand the legacy from the old system and that “nobody loves the old system as much as the day the new one is being implemented”. This in turn means that everything takes so much longer time than expected because of inherent resistance towards new things.

To give an example of this, there are “super users” of the old system that will loose power when a new system of which they have no knowledge is introduced. Furthermore, ERP systems are sometimes implemented as a way to rationalize and reduce the work force. So in addition to employees being reluctant to change their ways of working, some people are actually worried of loosing their jobs when an ERP system is implemented. This does obviously not contribute to cooperation.

The interviewee states that centralization should be the aim in order to facilitate communication between the countries. A centralized way of working does, however, require that the system is pushed down and people in other countries are in general not interested in implementing a Swedish system and therefore keep on working in a way similar to before the implementation. This is problematic as things are connected in the new system, i.e. if things are done correctly it can result in problems, for example that things do not add up when closing books.

According to Johan it is important that the consultants get to participate in the education of intended “super users” locally in order to make sure that right information is given to the users. There is always a risk that information gets distorted when communicated through someone else. He notes sometimes when the users do not speak English and education needs to be done in a “third language” they easily lose control and the quality of the education usually suffers.

Another crucial factor according to Johan is to have a counsel with competent people that go through the local demands and see which ones are legal demands and make sure that they do not interfere with the central demands and requirements on the system. He further notes that the local controllers should not be involved when listing local requirements as all demands then tend to be “legal requirements” and that this is a way of buying themselves time in order to post-pone the introduction of the system.

Johan had an example of this when a controller came up with a long list of legal demands, of which many could not be incorporated into Jeeves, and thus obviously a big obstacle for the implementation. It turned out that none of these demands were in fact legal. After it was acknowledged that these demands were unnecessary the controller stopped cooperating and finally had to be relieved from her post, after which the implementation could proceed.

Although the controller should not be trusted to state the legal demands for the system, it is crucial that they involved in the implementation project in order to make sure that the system is running correctly and that financial data is reported correctly. Otherwise, for example the VAT might end up being reported

incorrectly and thus result in fines for the company, something Johan has seen examples of.

To get the controllers involved in the project can be complicated, however. They can for example be reluctant to talk to the project leader or people from the project team because of their title. Also, the controller might think that “he is too good for such work” as an ERP implementation, but in order to get everything right such as VAT reporting it is essential that the local CFO gets involved.

4.2.2 Jeeves Interview analysis

The interview with Jeeves consultant Johan resulted in some critical success factors that could be perceived as more specific and direct than those from the cases and thus complement the cases. A consultant having worked with several ERP system implementations surely has a quite different view than that given in the cases, where specific implementations are studied.

An interesting finding from the interview was that the outcome of international ERP implementations, in Johan’s opinion, are much more about the personality of the people involved than the culture they are from. This can be contrasted by the research of several others (e.g. Hawking, 2000; Hofstede and Hofstede, 2005; Sheu *et al.*, 2004), which point to cultural differences as one of the primary sources of challenges in international change projects.

The difficulties related to the implementation in Belgium can be discussed both from the perspective of individuals’ differences and from the perspective of a lack of top management support. In the latter perspective, the problem was not a total lack of top management support, but the available top management support was not constructive, but even contra productive. As the most frequently discussed critical success factor in previous studies (Muscatelli *et al.*, 2003; Snider *et al.*, 2009; Doom *et al.*, 2010; etcetera), top management support is here, again, proven to be crucial to successful ERP implementations. However, the suggestion here is also that top management should be dedicated in a suitable and constructive way and not encouraged to take over the project as he/she finds most suitable, but listen to those with more experience from similar projects.

The statement from Johan that "nobody loves the old system as much as the day the new one is being implemented" and the observation that super users of the old legacy systems might feel threatened by the new ERP system, are examples of resistance to change in ERP implementations that must be addressed properly. As discussed earlier, the efforts, which are required to manage change in such projects, are often heavily under-estimated (Grover, 1995). However, no suggestions were given from the interview with Johan to whether this is a problem that is more likely to occur in SMEs than in large organizations, in order to shed light to the earlier discussion between Levy and Powell (2000) and Buonanno *et al.* (2005) who argues for this being more of a problem in SMEs, on the one side, and Argyropoulou *et al.* (2007) and Laukkanen *et al.* (2007) who argues that it might be easier in SMEs, on the other side.

Furthermore, a new aspect from the interview, which to our knowledge has not been discussed in previous studies, was that ERP systems sometimes are implemented as a way of reducing the work force. This could understandably become a driving factor for resistance to change among the employees, if it becomes known. This has not been mentioned in any previous research, and perhaps because most researchers have done their research post-implementation with people from the company, and obviously not the ones who got relieved after the implementation.

From previous experiences, Johan suggest that external consultants should be responsible for the education of intended super users, as also suggested by Sheu *et al.* (2004). If not, information is easily distorted and wrongfully communicated.

As also suggested by Plant and Willcocks (2007), Sheu *et al.* (2004) and Yen and Sheu (2004), Johan points to difficulties, which can arise due to local legislations, such as taxation and other legal demands, in international ERP implementations. In his experience, local users and controllers should not set legal demands that the ERP system must comply with. However, they should be involved in the implementation since they are knowledgeable on crucial operational routines, such as VAT reporting.

4.2.3 Ekan interview

Interview with Charlotta Sundqvist, Senior Advisor, Management Consultant, Ekan consulting.

The interviewee is one of the co-founders of one of the largest ERP system vendors in Sweden, today a senior advisor at a management consultancy company.

Upon the question of which are the most critical factors to successful ERP system implementations, Charlotta especially emphasise the importance of having a suitable fit between the business strategy and the ERP- and IT-strategies, which is not often the case.

Through her prior experiences from several ERP implementations, both successful and less successful, she conclude that in many cases, there is an overconfidence in what a change into a process oriented approach will provide the organization. Much of the logic behind ERP systems is built around process orientation and researchers, ERP system vendors and consultants often promote standardization of processes throughout the entire organization in order to take full advantage of an ERP system. Most of the time, most companies choosing to implement an ERP system, accepts this as a necessity to make the ERP system work.

However, few actually question how and why their processes should be standardized. In Charlotta's experience, a successful ERP implementation is much more of a question regarding the overall business strategy and the IT-strategy and how an ERP system fits into these, than it is a question of adapting the organization to an ERP system. For example, if a subsidiary is a pure sales office, there is no meaning in trying to adapt their routines and processes to a common ERP system, but resources should be focused on having a well working *customer relationship management* (CRM) system in that subsidiary instead. This would as an example, in most cases, be a better fit with the overall business strategy and IT-strategy, she explains.

4.2.4 Ekan interview analysis

The importance of aligning the ERP strategy with the overall business strategy has been emphasised by several researchers, such as Markus *et al.* (2000), Madapusi and D'Souza (2005) and Sheu *et al.* (2004). In order to support an organization, it might seem obvious that the introduction of an ERP system should fit the organizational structure and its overall corporate strategy. However, as Charlotta pointed out, most companies do not reflect on this when the partner vendor or consultant argue that the entire organization must have common processes and work according to the same routines, in order for an ERP system implementation to be successful. Carton and Adam (2003) also question this centralization and streamlining of global processes in order to suit the ERP system.

However, some of the intended benefits as a result of the introduction of a common global ERP system are to some extent related to change of processes. Shang and Seddon (2000) argue that benefits such as changed culture with common visions, can be a result of the implementation of an ERP system. O'Leary (2004) point to benefits such as: new improved processes, integration, standardization and globalization, as results of implementing an ERP system. Laukkanen *et al.* (2007) highlights that, especially SMEs, turn to ERP systems to accomplish integration in the organization.

It is plausible to assume that these kinds of benefit from the implementation of an ERP system derive from process- and organizational-related overviews and, to some extent, streamlining of global processes.

With these two somewhat differing point of views on process-standardization and organizational centralization as a critical success factor to international ERP implementations, the rationale seems to be that companies that are choosing to implement an ERP system in their international organization should ask themselves: *What benefits are expected from the ERP system and what kind of business strategy should the ERP system support?*

Thinking in terms of these questions as one part in drawing up the general guidelines of the ERP strategy could give a rough idea of how an ERP system ideally should be implemented in the organization.

5. Suggestion for framework

In the first section of this chapter, differences and similarities across the literature and the empirical findings are compared and discussed. The critical success factors to international ERP implementations in SMEs, as identified in this study, are then summarized into a framework in the second section of this chapter

5.1 Discussion of the critical success factors

The findings from the cases and from the interviews with the consultants were presented and analysed in the previous chapter. In the discussion below, the findings are compared across the cases and interviews with the consultants, as well as being further related to the theoretical findings. Here, the findings are also divided into the categories of critical success factors, which the theoretical review suggested, to enable the construction of the framework, which is summarized in section 5.2.

5.1.1 Top management support

As the most frequently identified critical success factor to ERP implementations, *top management support* appears to be of undeniable importance to successful ERP implementations, which was verified by most previous studies as well as the empirical findings. It is top management that set the priority for the project and is responsible for allocating resources for the project thus strongly influencing the project (Snider *et al.*, 2009).

In SMEs, where top management typically are hierarchically closer to the rest of the organization than in large organizations, top management support and dedication to the project have been suggested to be even more important than in large organizations (Huin, 2004; Levy and Powell, 2000; Snider *et al.*, 2009).

Whether this was the case could not be confirmed by the empirical findings, although the Golvabia case indicated a support of this. In this case the CEO, who was the CFO at the time of the implementation, was both the project champion and a member of the project team, something that according to Huin (2004) is likely to have a positive effect. In this case it allowed him to both drive the project and at the same time be very receptive of the employees' opinions and ideas.

Furtermore, Shaul and Tauber (2012) similarly suggested that it might be beneficial to appoint a member of the top management team as project champion in ERP projects in SMEs. The Golvabia case also supported this, and the findings suggest that, as in this case, having a CFO as a project champion can have several advantages: He/she has typically in-depth knowledge about the organization as well as a "helicopter perspective" to see the big picture; having a top manager as project champion can work as a motivator for other employees; and it can emphasise the importance of the project.

As Gable and Stewart (1999) suggested, this closeness of e.g. the CEO to the rest of the organization, might however also provide issues of him/her having difficult to delegate responsibility and sharing information. Jeeves consultant Johan gave an example of this for an implementation where the local CEO was so dominant that the project team was not able to communicate with the intended users. Not until this CEO was relieved from his position could the implementation proceed smoothly.

From the international perspective of ERP implementations, the ITAB case and the Miller Graphics case suggested the importance of having dedicated top managers also on the local sites. The ITAB case even suggested that a lack of local top management support could jeopardize the implementation.

5.1.2 Aligning the ERP strategy with the business strategy

In this study, the factor of aligning the ERP strategy with the overall business strategy is treated as a critical success factor. The factor is here treated as a merge with the CSF *Strategic planning and goals*. Initially, this was a factor that did not appear to have an as profound impact on ERP implementations as e.g. top management support or cultural differences, which are recognized as critical success factors in several previous studies. With a few exceptions (Markus *et al.*, 2000; Madapusi and D'Souza, 2005), *aligning the ERP strategy with the business strategy* is not a commonly recognized critical success factor to ERP implementations.

To align the ERP strategy with the overall organizational structure and the long-term business strategy might seem obvious. However, as management

consultant Charlotta pointed out, this is, unfortunately, far from always the case. Furthermore, findings from both the Miller Graphics case and the ITAB case suggested that aligning the ERP strategy with the business strategy is a critical success factor: The ITAB case suggested that it is possible to have a decentralized organization with individualistic and entrepreneurial subsidiaries, which are free to do as they wish, but still gain benefits from a successful ERP system implementation. The Miller Graphics case on the other hand showed that the approach, often advocated by ERP vendors and consultants such as Jeeves consultant Johan, of centralizing and streamlining an international organization and setting up common processes throughout the entire organization, might equally well provide benefits from a common ERP system.

However, a factor that also must be taken into account in this discussion is that of the size of the organization. For example, ITAB, with about 2000 employees, is considerably larger than Miller Graphics, with about 400 employees. As suggested by Snider *et al.* (2008), the importance of alignment between the ERP strategy and the business strategy might be more significant in large organizations than in SMEs.

Snider *et al.* (2008) also suggest that the size of an organization might influence the necessary level of alignment between the ERP strategy and the business strategy. The rationale behind the reasoning by Snider *et al.* (2008: p. 22) is that "First, legacy systems might be so inadequate that improvements were obtained despite the strategic alignment. Second, SME staff might be tacitly aware of the strategic vision to incorporate this vision into project plans."

It could, furthermore, be argued that alignment between the ERP strategy and the business strategy could be harder to achieve in SMEs than in large companies. Researchers such as Buonanno *et al.* (2005), Malhotra and Temponi (2010) and Sharma (2011), among others, have suggested that this might be the case, since SMEs typically have less focus on long-term strategic planning in the first place.

The Miller Graphics case did, however, suggest that a conscious decision regarding the ERP strategy derived from a long-term strategic awareness can be a part of the international ERP implementation, even in SMEs. This was also

further supported by the interview with management consultant Charlotta at Ekan consulting.

5.1.3 Change management

In order for an ERP implementation to be successful, several authors emphasized the importance of change management, as did most interviewees. In accordance to the findings of Argyropoulou *et al.* (2007), top management support, participation and commitment from top management was by Golvabia considered to be very important factors in order to facilitate change.

When rolling out an ERP system internationally, it is also very important to secure local support and involvement on the sites where the system is to be implemented in order to facilitate change. This was also suggested by both the ITAB case and the Miller Graphics case. As discussed previously, ITAB had an example of lack of involvement from the local CEO, which had very negative effects once the system was to be implemented.

Another interesting factor that was pointed out by Malhotra and Temponi (2010) was the need to identify who has the “power” among the employees, also something that was supported by the Golvabia case. It is unclear whether this is more important in an SME, but because of the close working environment it is reasonable to believe so. Either way, it should most likely be easier to identify those people in an SME because of the low levels of hierarchy.

Another factor relating to change management, which was not emphasized in the literature, was the importance of the personalities involved and affected by the implementation, rather than the importance of the culture that these individuals belong to, which will be elaborated under the CSF *Culture and language*. As Johan, Jeeves consultant, for example suggested that “nobody loves the old system as much as the day the new one is being implemented” and that ERP implementations are “90 % psychology and 10 % technique”. A part of this is to realize the legacy from the old system and who will lose power when introducing a new system.

Another interesting finding that was not discussed in the literature was the method of identifying and starting with those sites where an implementation is

most likely to succeed. This technique was employed both by ITAB and Miller Graphics that chose to start with what was believed to be the less troublesome sites and later used this example for internal promotion and benchmarking. Internal resistance could thus be reduced as it enabled people to see the benefits that could be achieved.

5.1.4 Communication

Both Upadhyay *et al.* (2011, p. 142) and Malhotra and Temponi (2010) emphasized the need for effective communication during an ERP implementation project, whereas Snider *et al.* (2009) rather suggested that formal communication was not associated with project success in the cases they studied.

In support of Malhotra and Temponi (2010), who also suggested that top management need to communicate that they were the ones to initiate the project, this was supported by the ITAB case. The CIO at ITAB argued that clear and effective communication to the sites where the system was to be implemented was very important. He further meant that it was important that the directives came from the very top and that it was not sufficient with directives from him as a CIO. Similarly the Miller Graphics case supported this, since clear and unambiguous communication towards the rest of the organization was seen as an important factor. As quoted by Jenny, Miller Graphics: "this is the way we have chosen and there are no alternatives at this point", which was the message towards the rest of the organization upon the choice of having a centralized ERP strategy.

In support of Snider *et al.* (2009), however, Golvabia did not use much formal communication and still considered their implementation successful. Rather there was a large emphasis on informal communication and Peter, who at that time was CFO and project champion, spent much time walking around and talking to the employees and tried to be perceptive of their concerns.

From these cases it is hard to draw any conclusions with regards to how communication should take place. Nonetheless, some kind of communication, formal or informal, seems to have been present in all cases. Nonetheless, since an

international ERP implementation normally means implementing a system at quite remote locations, it is very unlikely that communication can take place in a manner similar Golvabia and some more formal communication might therefore be necessary.

5.1.5 Project team

This factor was merged with the CSF *User involvement and skills*. The importance of appointing a project team of the right mix, the right competence and with an appropriate team structure was highlighted in previous research (Doom *et al.* 2010; Malhotra and Temponi, 2010; Soja, 2006). For SMEs that often lack the necessary technical competence, this often means taking help from external vendor or consultants (Snider *et al.*, 2009), which for example Golvabia found very useful. This will be further discussed under *Vendors and Consultants*.

Furthermore, for SMEs with limited human resources, a good solution according to Malhotra and Temponi (2010) could be a heavyweight team structure so that the team members work part time with the project. Nonetheless, the employees should be prepared to work overtime during the implementation project as there is not normally any employees to take on additional tasks (Eshelman *et al.*, 2000; Snider *et al.*, 2009). Also this was the case at Golvabia where those that were very heavily involved in the implementation project worked extreme amounts of over time during the months that the system was being implemented. In addition, most of the staff had to help with simpler things like data conversion, which both helped in saving money and also made sure that the employees got acquainted with the new system.

From an international perspective, it has been recommended that the project team should represent the nationalities of the sites where the ERP system is to be implemented (Sheu *et al.*, 2004). This was the case both at ITAB and Miller Graphics and the local CEO was expected to take an active role in the implementation project at both companies. As noted under *Top management support*, ITAB had an experience where the local CEO, although being a part of the project team, did not take an active role, which in turn delayed the implementation.

5.1.6 Vendor and consultants

From the international perspective, the discussion of vendor- and consultant-support is largely based on the issues often arising from the large distances between the vendor or consultant and the organization's international sites (see e.g. Plant and Wilcocks, 2007; Sheu *et al.*, 2004; Zhang *et al.*, 2005).

Apart from the critical success factor of having a partner vendor/consultant to aid the ERP implementation, a couple of issues related to this have previously been discussed: From the SME perspective (where the CSF was originally titled *External consultant*), the typical issues related to the necessary vendor and consultancy support (Adam and O'Doherty, 2000; Buonanno *et al.*, 2005; Doom *et al.*, 2010), are often those of ensuring the competence of the external partner (Adam and O'Doherty, 2000) as well as a lack of resources in order to pay for the external expertise (Snider *et al.*, 2009).

The Miller Graphics case suggested that it might be possible to consult an external partner only for long enough to develop successful in-house training- and support-functions. Interestingly, this rather contradicts findings from previous studies, which found that SMEs typically lack the necessary human resources and knowledge to do this (Adam and O'Doherty, 2000; Buonanno *et al.*, 2005; Doom *et al.*, 2010; Snider *et al.*, 2009). Another interesting, and contradicting, aspect of this is that both previous studies (Adam and O'Doherty, 2000) and the Golvabia case, stressed the importance of having a close-knit relationship with the external partner in order for the implementation to be successful, also in the long run, post-implementation. While Miller Graphics developed training and support in-house to be less reliant on the external partner in the long-term perspective, Golvabia has valued their close and long-term commitment with their vendor/consultant-partner as a critical success factor.

Due to the somewhat ambiguous findings on this subject, it is hard to come to a consensus regarding how vendor and consultants are ideally used in international ERP implementations in SMEs.

The conclusion here must be that SMEs implementing an ERP system in an international organization should consult an external expertise partner. This is

supported by all the cases in this study and by the previous studies reviewed in the theoretical framework. However, how this collaboration should ideally be structured in such projects, remains unanswered.

5.1.7 Training and education

SMEs typically lack the required knowledge and IT-experience in-house for internal education (Adam and O'Doherty, 2000; Doom *et al.*, 2010; Buonanno *et al.*, 2005) and they typically have limited resources to allocate on training and education from consultants (Snider *et al.*, 2009). Furthermore, the international dimension adds to the complexity of training and education due to the often large distances and differences in language between the consultant and the employees being educated (Plant and Willcocks, 2007).

In the light of this, managing the necessary training and education in international ERP implementations in SMEs, appears rather difficult.

However, the findings from the Miller Graphics case suggest otherwise. After having completed the initial training and education with key super users of the project team, the training performed by the external consultant was considered completed. An internal training program was then developed by the internal project team, which was later used for the further training and education throughout the rest of the company group.

Furthermore, the Golvabia case suggest that a way for employees to get acquainted with the system and to get hands-on experience, the future users of the system could be allowed to be heavily involved in the implementation process. For example, in data migration from the old legacy system to the new ERP system, as in the Golvabia case.

5.1.9 Culture and language - and individuals

The dimension of cultural differences in change projects covering international organizations in general, and more particularly international ERP implementations, is frequently discussed in academic research.

The importance of dealing with cultural differences as a part in managing an international ERP implementation is mainly supported by the theoretical findings in this study. The empirical findings, however, mainly stressed the

importance of managing people and individual differences. Both the Miller Graphics case and ERP consultant Johan pointed to the influence that the individuals involved in an ERP implementation has on the outcome of the project. As Johan, Jeeves consultant, suggested from his experiences, it is "90 % psychology and 10 % technique". Both Jenni and Johan suggest that whether an international ERP implementation is successful or not, is more likely to rely on the individuals involved, than on the cultural differences inherent to the project. As Jenni, Miller Graphics commented: "There are better and worse sites, but in the end it's about the individuals involved".

The ITAB case did, however, support the theories of cultural differences by Hofstede and Hofstede (2005). The *power distance vs. uncertainty avoidance* theory would have predicted the same cultural differences as experienced by ITAB.

Hence, the conclusion here is that theories of cultural differences and related models, such as Hofstede and Hofstede's *power distance vs. uncertainty avoidance*-matrix, can be a good starting point when planning large-scale international ERP implementations and can be used to conceptualize the international implementation strategy. For example, more customized and targeted implementation strategies, which are specifically suited to the countries involved in the ERP rollout, could be applied to aid the implementation: The countries involved in the implementation could be categorized into a 2x2-matrix, such as the one shown in *figure 1*, and one implementation strategy could be adopted to each of the four cultural clusters.

Nonetheless, organizations are essentially people and individuals, and it is, as suggested by findings in all the cases, these individuals that will be the decisive factor to the outcome of an international ERP implementation. That is, the psychological factor is very important.

5.1.10 Regulations and legislations

Authors such as Plant and Willcocks (2007); Sheu *et al.* (2004); and Yen and Sheu (2004) found that country-related differences, such regulations, legislations

and taxation systems, do provide difficulties in international ERP implementations.

The findings from this study, however, did not fully support the level of complexity provided by such specific factors as suggested in previous studies. However, findings from both the ITAB case and from the interview with Jeeves consultant Johan suggest that this kind of local legal demands, which the ERP system should support, should not be a task for local employees to set. The recommendations from this study are that for this, local auditors or other external professionals should preferably be involved or consulted if possible.

However, local employees could feel overlooked or bypassed in such process, which could make this a possibly sensitive subject. Nonetheless, both Jeeves consultant Johan and ITAB have experienced that local controllers tend to exaggerate and see everything as "legal demands" and thus produce extensive lists of what the system must be capable of, if they are responsible for setting these demands.

5.1.11 Management style and execution

The CSF of *management style and execution*, as it is discussed by Markus *et al.* (2000); Zhang *et al.* (2005); and Sheu *et al.* (2004), mainly concerns the choice of a phased- or a big-bang-type rollout. None of the cases or consultants interviewed mentioned this as a critical success factor. However, both the ITAB case and the Miller Graphics case suggested that starting with the sites that is expected to give rise to the least amount of difficulties is desirable. Both the ITAB and the Miller Graphics case suggested that benefits from such an execution strategy is that the internal knowledge and experience of how to implement an ERP system is increased from each successful implementation in the organization; and that the successful implementations can be used as internal benchmarking to convert strong resisters in other parts of the organization.

As Buonanno *et al.* (2005) found that effective project management can be hard to find in SMEs, and Zach (2010) found that SMEs typically have little experience from IT-system implementations, the suggested execution style from both ITAB

and Miller Graphics could be one piece of the puzzle for how an SME can manage such a project.

The Miller Graphics case suggested that the easiest sites to start with, are not necessarily the least complex parts of the organization, or the ones with the least cultural difference compared to the rest of the organization, but rather the ones where employees are the most dedicated and motivated to start implement the new ERP system. Again: the psychological factor is important in such projects.

Furthermore, in relation to dedicated employees, the Golvabia case also suggested just how important this dedication can be and how it might contribute to a successful ERP implementation: The execution of the ERP project at Golvabia was done in such way that it demanded employees to work hard and for many hours for the implementation to be successful - which it was. Especially since Golvabia is a small organization with only about 55 employees, the possibilities of removing employees from their daily tasks to take part in the implementation of a new ERP system, was very limited. Nonetheless, employees accepted to work overtime to complete the necessary tasks associated to the ERP implementation (e.g. data migration from old system). This was also a conscious choice from Peter, at the time the project leader, to have employees perform most of these necessary tasks instead of having external consultants perform them. Through this, the employees also gained experience and got training on the new system.

This could be one approach to solve the common problem of a lack of resources in ERP implementations in SMEs. However, it could also be an unpopular solution if employees are not dedicated and willing to work overtime. Thus, the management style and, once again, the right top management support appear to be important factors to successful international ERP implementations in SMEs.

5.2 The framework

The critical success factors discussed in section 5.1 are summarized in *Table 13* below, which illustrates the framework of critical success factors to international ERP implementations in SMEs as identified throughout this study.

Critical Success Factor	Components
<i>Top management support</i>	<ul style="list-style-type: none"> - Clear directives from headquarters towards the whole organization of why an ERP system is to be implemented (Golvabia; ITAB; Miller Graphics) - Secure top management support both at corporate group level and locally (ITAB) - CEO dominance in SMEs can be beneficial (Gable and Stewart, 1999; Golvabia) - Local top management help drive the change (ITAB)
<i>Aligning the ERP strategy with the business strategy</i>	<ul style="list-style-type: none"> - Consider the business strategy and make sure that the intended ERP strategy is aligning (Ekan; ITAB; Markus <i>et al.</i>, 2000; Madapusi and D'Souza, 2005) - The ERP system should support the organizational structure and business strategy: if decentralized and entrepreneurial business units are desired, do not demand all units to work according to a common, global model (Ekan; ITAB; Markus <i>et al.</i>, 2000; Madapusi and D'Souza, 2005) - If the business strategy involves an increasing centralization of the organization, the ERP implementation can be a good opportunity to review and redesign business processes towards a more centralized organization (Markus <i>et al.</i>, 2000; Madapusi and D'Souza, 2005; Somers and Nelson, 2001)
<i>Change management</i>	<ul style="list-style-type: none"> - Starting with less troublesome sites can serve as internal benchmarking, which can help reduce resistance to change on other sites (ITAB; Miller Graphics) - Communication, participation and commitment from top management can facilitate change (Argyropoulou <i>et al.</i>, 2007; Golvabia; ITAB) - Who of the employees has the "power"? (Golvabia; Malhotra and Temponi, 2010) - Understand the legacy of the old system and that some people will loose power because of the introduction of a new system (Jeeves consultant)
<i>Communication</i>	<ul style="list-style-type: none"> - Top management need to be perceptive and communicate with the employees, although the decision to implement an ERP system still needs to be clear and not affected by negative feedback from the employees (ITAB; Malhotra and Temponi, 2010; Miller Graphics)
<i>Project team</i>	<ul style="list-style-type: none"> - Project team with the right competence (Doom <i>et al.</i> 2010; Malhotra and Temponi, 2010; Soja, 2006) - Employees might need to be ready to work overtime and all help with the implementation and input of data, especially in SMEs (Eshelman <i>et al.</i>, 2000; Golvabia; Snider <i>et al.</i>, 2009) - Should reflect the multicultural composition of the project coverage (ITAB; Miller Graphics; Sheu <i>et al.</i>, 2004)
<i>Vendor and consultants</i>	<ul style="list-style-type: none"> - Devoted and experienced consultant/vendor is important (Adam and O'Doherty, 2000; Buonanno <i>et al.</i>, 2005; Doom <i>et al.</i>, 2010; Golvabia;

	<p>ITAB; Miller Graphics; Snider <i>et al.</i>, 2009)</p> <ul style="list-style-type: none"> - Preferably geographically close: Difficulties can arise due to large distances, e.g. related to support, training, etcetera (Golvabia; Plant and Wilcocks, 2007; Sheu <i>et al.</i>, 2004; Zhang <i>et al.</i>, 2005) - Make sure that consultant and/or vendor have possibilities of supporting the international organization (Adam and O'Doherty, 2000; Buonanno <i>et al.</i>, 2005; Doom <i>et al.</i>, 2010; Snider <i>et al.</i>, 2009), otherwise: consider insourcing these necessary functions (Miller Graphics)
<i>Training and education</i>	<ul style="list-style-type: none"> - Involve everyone in the implementation project so they get "a feel for the system" (Golvabia) - Internal training programs could be a way of reducing costs associated to training and education in international organizations as well as it could help making the training programs more customized to the specific organizational context (Miller Graphics) - Perhaps leave training of intended super users to consultants (Miller Graphics)
<i>Culture and language - and individuals</i>	<ul style="list-style-type: none"> - Mind the cultural differences when planning international ERP implementations (ITAB; Sheu <i>et al.</i>, 2004; Zhang <i>et al.</i>, 2005; Hawking, 2000; Krumbholz and Maiden, 2001; Yen and Sheu, 2003) - E.g. cluster the included sites in a <i>power distance vs. uncertainty avoidance</i> 2x2-matrix and apply suitable implementation strategies to respective sites (Hofstede and Hofstede, 2005; ITAB) - But do not neglect individual differences as well! Especially when identifying "easy sites to start with" or key super users, individuals are very important (Jeeves consultant; Miller Graphics)
<i>Regulations and legislations</i>	<ul style="list-style-type: none"> - Make sure that the legal demands specified by local users are actually legal demands (ITAB; Jeeves consultant) - Consider regulations such as those in China, of how financial reporting must be done and how to solve it in relation to the ERP system (ITAB)
<i>Management style and execution</i>	<ul style="list-style-type: none"> - Start with the locations that are believed to be the easiest first in order to gain some experience for what is believed to be more troublesome locations and also set an example for the rest of the organization (ITAB; Miller Graphics) - Consider the super users of the old system and the in heritage of the old system (Jeeves consultant)

Table 13 - The framework

A number of critical success factors identified in previous studies, were confirmed by the findings of this study. Such confirmed CSFs were: *Top management support, Aligning ERP strategy with business strategy, Change management, Communication, Project team, Vendor and consultants, Training and education,*

The new suggestions and insights from this study were closely related to some previously identified CSFs, but with a slightly different perspective. These new suggestions can thus be seen as complementary to the previous CSFs, rather than new CSFs or challenging the previous ones. An example of such factors was to start with the easy sites first, which can be seen as an element of the CSFs *Management style and execution*, *Change management*, and *Project management*.

A further new suggestion was that legal demands tend to be exaggerated by local users, which can be seen as part of the previously identified CSF of *Regulations and legislations*.

The CSF *Top management support* was mainly discussed from an SME perspective in previous studies, while in this study this was complemented by the suggestion of also local top management support being a critical success factor.

The last new suggestion from this study was that individuals are equally important to international ERP implementations as *Culture and language*.

The CSF *Strategic planning and goals* from the SME perspective was merged with the CSF *Aligning ERP strategy with business strategy* from the international perspective.

6. Illustration of the framework – Alignment Systems AB

In this section the framework will be applied on Alignment Systems AB, which is an SME that is about to implement an ERP system internationally.

6.1 About Alignment Systems AB

Alignment Systems AB (ASAB) is a Swedish company that produces measuring and aligning equipment for measurement and reparation of damaged vehicles. They compete by incorporating technically advanced solutions that offer superior results and are today one of leading companies in the world within this industry. ASAB consists of two sub-divisions: Josam that focuses on heavy-duty vehicles and Car-O-Liner that focuses on cars. The company currently has an annual turnover of approximately 500 MSEK and employs 270 people.

ASAB are today present in Scandinavia, the United States, England, Germany, France, Spain, Thailand and China, with the largest markets being Scandinavia, the United States and China. Headquarters and top management is located in Gothenburg while most of the production takes place in Kungsör.

Recently the company has made the decision to rollout a common ERP system in the whole organization in order to get better control of business processes, make business processes more efficient and enable data aggregation for headquarters. The system has earlier been implemented in Sweden and Norway and is shortly to be rolled out internationally. The vision is that the ERP system will help gain increased control and synergetic effects in the increasingly global organization.

As of today, the ERP system has been implemented but not gained any impressive results in terms of efficiency increases in the Swedish organization. A few reasons for this were identified by ASAB, for example that the consultants lacked the necessary competence and that insufficient resources were allocated for training. In order for the upcoming second implementation to be more successful, the framework from this research is applied on ASAB to point at things that are important to consider for success, i.e. critical success factors.

6.2 Critical Success Factors

The constructed framework, which was presented in the previous chapter, will in this section be applied to and discussed from the perspective of ASAB. While some critical success factors already appears to have been considered, others might be less so and the aim is therefore to highlight and discuss those critical factors that might be of extra importance for Alignment Systems AB. This chapter is based on the discussions from a meeting with ASAB, where the CSFs were discussed from ASAB's perspective.

6.2.1 Top management support

Alignment Systems AB is owned by an investment company with a board that makes the major financial decisions, e.g. the decision to rollout an ERP system internationally in the company. The company also have a top management located in Gothenburg that runs the company.

As far as top management support goes in Alignment Systems AB, it is mainly the CFO and Christer, the expert user of Jeeves as of today, who will be involved in the implementation project. The CFO will most likely lead the communication to the employees and "set the tone" from top management, which is an important part of the process.

Christer, who has worked at the company for many years and thus knows the company and its processes very well, will act as an unofficial project champion and project leader since he is very knowledgeable about the system. He also knows the organization and the local site managers well and has worked closely with them. To get the local CEO's on board and to ensure their commitment was one of the critical factors of the framework, and this might in turn be easier with personal connections that can build trust for a new system.

Nonetheless, relating back to the framework, top management support is still vital for a complex project like this to succeed. One aspect of this is sufficient resource allocation, e.g. for training. Since the board makes the major financial decisions, this might provide difficulties should the project for example go over budget for training. As was highlighted in the framework, one risk of having a top management that is not involved, although they might be supportive of the

project as a whole, is that the need for resources might be underestimated and that this in turn leads to inadequate funding and possibly put the success of the project at risk. Since this was the case for the implementation that was previously done in Scandinavia, extra precautions to avoid this happening again could be in order.

Upon discussing the framework with ASAB, the criticality of having top management support was one of the factors discussed more extensively. The importance of having both centrally and locally supportive top managers was highlighted from the framework.

In terms of central top management support, the CEO of ASAB is not expected to be operatively involved in the ERP project due to a very high workload. Even though CEO involvement would have been desirable, having the CFO, as well as Christer, as a part of the dedicated project team is to be considered dedicated central top management support.

However, the findings of the CSF of having highly dedicated local top managers as well, might have provided some insights to ASAB. It should be stressed here, again, that the framework suggests this to be a crucial factor in a successful international ERP implementation. As of today, there is no explicit decision to demand local top managers to be involved in the ERP project. The suggestion from the framework is to strive to ensure this and the authors believe this to be one of the areas that ASAB should focus on.

6.2.2 The project team and project management

A critical success factor that possibly could be hard to fulfil for ASAB is to allocate a project team with the right competence. Although Christer is a suitable project champion as he has close connection with both top management and local CEO's and also is knowledgeable about the ERP system, there is a need for more competence to make up a whole project team. People from both Josam and Car-O-Liner positioned in Norway or Kungsör will most likely be picked for this since they have used the system for a few years now and also know the company group. Although it will be beneficial to include people who are knowledgeable about the system, it will not fulfil the factor of having a cross-cultural team. Due

to lack of resources, however, this might not be reasonable. As it is, it might be hard to pick people for the project team also from Scandinavia as people tend to be overloaded with work already - a common problem in smaller companies.

Nonetheless, for the first two or three implementations, ASAB will take help from a consultant company, which is also the vendor partner, which has previous experience from implementations both internationally and in SMEs. To take help of consultants is one of the very important factors for SMEs who often tend to have limited IT expertise and also lack of the project management competence that is needed for such a complex project.

As discussed in the framework, due to this often limited amount of resources and experience of such projects in SMEs, it might prove necessary to consult an external consultant. But the hard part, as discussed with ASAB upon applying the framework, is how to ensure the right competence of the partner consultancy. Since the lack of adequate consultancy knowledge might have been one of the reasons for why the initial implementation was not successful, this is a rather sensitive subject to ASAB upon the upcoming second round of implementation.

The company's idea, as expressed when discussing the framework, is to make use of consultants for the first two to three implementations to build up the competence internally. This will probably help the project team to "begin to find one's feet" so that later implementations can proceed smoothly without extensive help of consultants, which would, although surely helpful, be a far too expensive alternative.

6.2.3 Alignment with strategy and rollout strategy

ASAB has the intention of having a centralized company group and communicate one common face towards their customers. As a part of this strategy, they are also planning to have a centralized ERP implementation, where inventory levels, order transactions and most other information are available via the ERP system throughout the entire organization.

This is to a large extent what the framework suggests as well: The strategic choice of striving towards a centralized company group should also be reflected in the choice of ERP strategy.

However, these strategies should be clearly communicated throughout the organization, towards subsidiaries and local sites so everyone knows about the future direction, as suggested by several authors. When discussing the framework with ASAB, the discussion on this came to cover the issue of how to communicate the intended strategy and how to create an understanding for this throughout the organization. This issue will be further discussed under *Communication* later.

In order to achieve a centralized implementation, a so-called common model will be developed in cooperation with the vendor/consultant, based on the business processes in Scandinavia. The common model will then first be implemented in Sweden, and later at the company's other locations. The consultants will help with setting the common model and also with the two or three first implementations, as mentioned earlier.

6.2.4 Execution

When discussing to the CSF of *Management style and execution* with ASAB, the suggestion of identifying the "easy sites to start with" to make the implementation less troublesome and to build up internal knowledge, this appeared to have been a thoughtful suggestion.

In the early planning process, it appears as if ASAB was planning to start with the sites that were "shouting the loudest" for a new system. This might address the most dedicated local top managers or super users, which is not to be neglected as well (see *Top management support*). Starting with the "easy sites", however, might also serve as internal benchmarking later on, given that those implementations are successful.

6.2.5 Change management and communication

As top management will be sparsely involved in the actual implementation of the system, clear communication and directives from top management and an explanation on why a new system is to be implemented will be an important part of indicating the importance of the project. Initially weekly or monthly letters that highly stresses the importance of the implementation project is planned to be sent out, probably signed by both the CFO and CEO. As top management

support is vital for a change project to succeed, this seems like a good start.

However, the importance of not only top management support, but also top management involvement was suggested in the framework in order to facilitate change. This obviously depends on the specific context where the system is to be implemented and to recall what Jeeves' consultant Johan said, "an ERP implementation is 90 % psychology and 10 % technology". This in turn means that it is possible that more communication and change management will be necessary on some sites, e.g. because of a local top managers that is reluctant to implement a new system.

Christer will most likely travel to all the subsidiaries and help with the implementation, something that could be very helpful in initiating change, as he knows the local top managers well. Nonetheless, should a site turn out to be very difficult, it might be necessary that the CEO or CFO get more involved and direct "with a heavy hand".

Another thing to consider is that the subsidiaries in the different countries have very close working relations and often meet each other. The first few implementations will therefore be crucial, as positive as well as negative feedback will spread quickly throughout the organization. As suggested in the framework, it is therefore highly recommended that ASAB start with what is believed to be the "easier" location to start, preferably with people that are willing to introduce a new system, as discussed earlier.

During the framework discussion with ASAB, it was mentioned that the United States subsidiary are not satisfied with their current system and are eager to implement a new system. According to Christer, they do not mind that it is a Swedish system and there is also an employee who is a highly knowledgeable and potential super user. The level of local top management support was, however, not discussed and should be secured before suggesting the U.S. subsidiary as a potentially suitable site to start with.

6.2.6 Training and education

The training will initially be done by large with the help of consultants, something that is identified as a critical success factor due to the lack of expertise

in smaller companies. Alignment Systems AB also aim to take help of local consultants in e.g. USA and China so that education can be done in mother tongue with local partners to Jeeves who are knowledgeable about the system as well as the local culture and language.

There are also already thoughts on possible super users on the different sites, which is a good start considering the important role of super users and that it is beneficial to find those who will be enthusiastic about the project.

The aim is to eventually handle support internally, as there are people who are knowledgeable within their area of Jeeves in addition to Christer who have a somewhat broader knowledge. This was also discussed as a possible strategy for training and education in international ERP implementations in SMEs in the framework.

6.2.7 Vendor and consultant

As mentioned above, Alignment Systems AB will make use of consultants knowledgeable about both international implementations and implementations in SMEs. Although it is hard to judge the competence of a consultant before the work starts, as discussed earlier, ASAB seem satisfied with the choice of consultant so far. They are also located in Gothenburg, which could be beneficial as proximity was one important factor mentioned in the framework in order to be able to discuss complex issues face-to-face.

Nonetheless, an ERP implementation is also about personal chemistry and it is hard to analyze further whether the consultant is the right person for the job before the rollout is initiated. That there is competence for both the system and international and SME implementations does, however, seem like a good start.

6.2.8 Culture

The company group of ASAB stretches from the United States via Europe, to China. With such a wide spread company group, cultural differences are a natural part of the organization.

The suggestion from the framework is that individual differences and personality might be an equally important factor to successful international ERP

implementations as cultural differences. During the discussion on the framework, the discussion of this factor was mostly focused on identification of potential key super users on local sites.

However, as culture can be an important factor to consider, e.g. when planning the international rollout strategy, the cultural dimension of the framework might have provided some useful insights to ASAB. For example that extra clear and thorough instructions might prove useful in regions where uncertainty avoidance typically is high. Or that in regions, which are typically associated with large power distance, extra attention might be given to ensure that employees actually have understood the training and education and that they are not just avoiding to argue with a person outranking them.

6.2.9 Regulations and legislations

The main discussion of this part of the framework with ASAB was the importance of ensuring that legal demands set by local sites are actually legal demands. The consultancy partner had, however, already informed ASAB about this being a quite common problem. Since the consultancy partner also have made numerous international implementations they appear fairly knowledgeable about what the legal demands are in the different countries. This is thus not seen as a major problem in this case, given that the consultancy partner is as experienced as claimed.

In China there are a different set of demands as there are certain requirements for reporting of e.g. financial data to the government. This system should, however, be compatible with Jeeves and is therefore not seen as a problem either, also, given that the consultancy company has the experience required.

7. Discussion

The purpose of this study has been to identify the critical success factors for international ERP implementations in SMEs. As the topic is previously rather scarcely studied, the theoretical framework was based on studies on CSFs for ERP implementations in SMEs and CSFs for international ERP implementations. This resulted in the identification of nine, respective five CSFs.

The framework constructed specifically focused on international ERP implementations in SMEs in this study shares many CSFs with, for example, the framework suggested by Sheu *et al.* (2004) from the international perspective, where four of the ten CSFs were common: *Aligning the ERP strategy with the business strategy*; *Culture and language* - with the addition of individuals; *Management style and execution*; *Regulations and legislations*. Furthermore, the frameworks of CSFs for ERP implementations in SMEs as suggested by Doom *et al.* (2010) share five CSFs with the findings from this study: *Top management support*; *Change management*; *Communication*; *Project team*; and *Vendor and consultant*. The CSF *Training and education* was a result of parts of other CSFs, such as *vendor and consultant*, as well as from the empirical findings.

The findings from this study suggested mergers between some of these fourteen CSFs, which resulted in the ten CSFs that were presented in the framework. Overall, the findings from this study did support these CSFs, although some CSFs were more emphasised than others. The factor that received the most consideration both in literature (see e.g. Snider *et al.*, 2009) and in this study was top management support. Whether this means that this is the most important CSFs is not certain, but it is reasonable to believe so.

In addition, the role of vendors and consultants, which have been highlighted as crucial both for implementations in SMEs (see e.g. Snider *et al.*, 2009; Adam and O'Doherty, 2000) and international implementations (Plant and Willcocks, 2007; Zhang *et al.*, 2005), was another factor that was highly emphasized in this study.

One of the cases was of particular interest for the possible identification of new insights of CSFs for international ERP implementations in SMEs since this one case company was precisely an international SME. This case mainly supported five of the CSFs. The findings from the other cases did, however, also suggest that

all of these ten CSFs most likely do affect international ERP implementations in SMEs. Also, some interesting findings that complemented the identified CSFs from literature, rather than challenged them, were made.

The use of external consultants and the importance of training and education were highlighted from both the international (Plant and Willcocks, 2007; Zhang *et al.*, 2005) and the SME (Shaul and Tauber, 2012; Snider *et al.*, 2009) perspective. The Miller Graphics case, which is an international SME case, gave some new insights regarding how these factors might relate specifically to international SME implementations: The suggestion was that it might be a feasible solution to develop an internal training program to address the training and education needs in an international ERP implementation in an SME, which is somewhat contradictory to previous studies only focusing on SMEs.

Furthermore, the international SME case, as well as the international case, suggested that starting with the easy sites first could be a suitable rollout strategy. This finding is seen as complementary to the CSFs of *Management style and execution*, *Change management*, and *Project management*.

A further suggestion from this study, focusing on international SME ERP implementations, is that individuals are at least as important as cultural differences. Several previous studies have highlighted culture and language as critical success factors to address to enable successful international ERP implementations (Hawking, 2000; Krumbholz and Maiden, 2001; Sheu *et al.*, 2004; Yen and Sheu, 2003; Zhang *et al.*, 2005). Whether individuals are equally important as culture and language only in international SME ERP implementations is not likely, but still emerged during this study of international ERP implementations in SMEs.

The use of qualitative methods such as case study research and interviews were judged to be the best research methods for this research due to the fact that little research is done on international ERP implementations in SMEs and part of the aim was to find new knowledge. It would have been interesting to conduct further research on other SMEs that have implemented ERP systems internationally, although such case were difficult to find since it is still a rather

new phenomenon. If more such cases could be identified and studied it would probably result in a more rigorous framework.

Furthermore, the case interviews were conducted with employees who were part of the top management teams of the respective organization. It is likely that this have affected the findings in a number of ways: On the one hand, information on a relatively high level of abstraction and strategic level was shared, which would most likely not have been accessible information if employees further down in the organization were the main source of data collection. But on the other hand, input from employees further down in the organizations might have provided other perspectives on what factors are important, how they are important and how the factors might have affected the implementations.

In addition, it would be interesting to conduct a quantitative study on the identified critical success factors as a follow up to assess their accuracy with a more deductive approach, and also to see if there is any particular order they could be arranged into. This is thus an idea for future research. Also the previously mentioned input from other parts of the organization can be a part of such future studies.

8. Conclusions

SMEs that choose to implement an ERP system internationally face a complex and most likely lengthy implementation project. This research has shown that both factors of being an SME and doing an international implementation complicates the already complicated process of implementing an ERP system further. SMEs often face challenges like lack of resources and lack of IT-skills, whereas an international implementation adds other elements such as culture and language that needs to be taken into consideration. To identify and address those factors that are critical for success is therefore a wise step in order to succeed with such an implementation.

The purpose of this thesis was to identify those factors, and a literature review complemented by a qualitative study resulted in a framework with ten critical success factors. These factors are presented in table 14 together with the most important components of each CSF. The empirical study mostly supported the literature and did not result in any new CSFs. It did, however, complement the literature by adding new components to the CSFs. Some CSFs that were present in literature in both the international and SME perspective, such as vendors and consultants, were combined in the framework.

Critical Success Factor	Components
<i>Top management support</i>	<ul style="list-style-type: none">- Clear directives from headquarters towards the whole organization of why an ERP system is to be implemented- Secure top management support both at corporate group level and locally- CEO dominance in SMEs can be beneficial- Local top management help drive the change
<i>Aligning the ERP strategy with the business strategy</i>	<ul style="list-style-type: none">- Consider the business strategy and make sure that the intended ERP strategy is aligning- The ERP system should support the organizational structure and business strategy: if decentralized and entrepreneurial business units are desired, do not demand all units to work according to a common, global model- If the business strategy involves an increasing centralization of the organization, the ERP implementation can be a good opportunity to review and redesign business processes towards a more centralized organization
<i>Change management</i>	<ul style="list-style-type: none">- Starting with less troublesome sites can serve as internal benchmarking, which can help reduce resistance to change on other sites

	<ul style="list-style-type: none"> - Communication, participation and commitment from top management can facilitate change - Who of the employees has the “power”? - Understand the legacy of the old system and that some people will loose power because of the introduction of a new system
<i>Communication</i>	<ul style="list-style-type: none"> - Top management need to be perceptive and communicate with the employees, although the decision to implement an ERP system still needs to be clear and not affected by negative feedback from the employees
<i>Project team</i>	<ul style="list-style-type: none"> - Project team with the right competence - Employees might need to be ready to work overtime and all help with the implementation and input of data, especially in SMEs - Should reflect the multicultural composition of the project coverage
<i>Vendor and consultants</i>	<ul style="list-style-type: none"> - Devoted and experienced consultant/vendor is important - Preferably geographically close: Difficulties can arise due to large distances, e.g. related to support, training, etcetera - Make sure that consultant and/or vendor have possibilities of supporting the international organization otherwise: consider insourcing these necessary functions
<i>Training and education</i>	<ul style="list-style-type: none"> - Involve everyone in the implementation project so they get “a feel for the system” - Internal training programs could be a way of reducing costs associated to training and education in international organizations as well as it could help making the training programs more customized to the specific organizational context - Perhaps leave training of intended super users to consultants
<i>Culture and language - and individuals</i>	<ul style="list-style-type: none"> - Mind the cultural differences when planning international ERP implementations - E.g. cluster the included sites in a <i>power distance vs. uncertainty avoidance</i> 2x2-matrix and apply suitable implementation strategies to respective sites - But do not neglect individual differences as well! Especially when identifying “easy sites to start with” or key super users, individuals are very important
<i>Regulations and legislations</i>	<ul style="list-style-type: none"> - Make sure that the legal demands specified by local users are actually legal demands - Consider regulations such as those in China, of how financial reporting must be done and how to solve it in relation to the ERP system
<i>Management style and execution</i>	<ul style="list-style-type: none"> - Start with the locations that are believed to be the easiest first in order to gain some experience for what is believed to be more troublesome locations and also set an example for the rest of the organization - Consider the super users of the old system and the in heritage of the old system

Table 14. A framework for international ERP implementations in SMEs

Since SMEs are high in number on most markets, as well as competing more globally, and at the same time also are turning to ERP systems to help them compete, international ERP implementation in SMEs is likely to become more common. Since this combination is also sparsely researched, this framework complements the current research on ERP implementations.

Furthermore, the framework could possibly be used as a part of an analysis tool for investigating why an international ERP implementation in an SME has not been successful. It is likely that the framework is of use for this purpose as well since the studied critical success factors are often based on findings of what has not worked.

In addition to the theoretical contributions, the framework could also be used in the planning process of international ERP implementations in SMEs. An evaluation of the framework put into use for such an implementation, was presented in chapter 6. The intention is that the framework should be used as a tool, which enables the project leaders and managers who are about to embark on an international ERP implementation in an SME, to structure their efforts and increase the likelihood of a successful implementation that provides the intended benefits to the organization.

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9. Appendix

Appendix A - Interview guide

Part 1

This part consists of guiding questions to get the respondent talking freely about the subject. The questions are only used as inspiration to encourage the respondent to share his/her experiences on the subject and as help if the respondent is not very talkative. The questions are complemented with basic questions about the company, the respondents role in the company, et cetera.

- Tell us about your recent ERP implementation?
- Would you consider your recent ERP implementation successful?
- What are the most important factors having affected your recent ERP implementation?
- What should/could have been done differently?

Part 2

This part of the interview guide consists of the topics for the semi-structured part of the interview. The topics consist of the critical success factors of the theoretical framework. For example, the CSFs are used as interview object as: “In what way did *Top management support* affect your recent ERP implementation?”. Here the respondent is encouraged to discuss freely around this specific factor and its affects on their ERP implementation. The CSFs are clarified and put in a context if the respondent is not familiar with the terminology.

- Top management support
- Business process change
- Clear goals and objectives
- Training and education
- Change management
- The project team
- Vendor and consultant
- Project management
- Minimal customization

- Culture and language
- Management and execution
- Regulation and politics
- Business strategy and organizational structure