EKONOMIHÖGSKOLAN
Lunds universitet

Institutionen för Informatik

2007-01-30

Proactive Information System Integration:

A Concept of IS integration in Mergers and Acquisitions

Master Thesis, 10 credits, within the System Science Programme

Presented: January, 2007

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LUNDS UNIVERSITET
Informatik

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Abstract

This thesis is the result of a case study which has its starting point in the fact that mergers and acquisitions are characterized by a high level of risk and often fail to reach stated goals such as leverage of synergy, many times due to the inability of integrating the concerned organization's information systems. Existing problem perspectives do not include what could be a factor contributing to successful information system integration and thus lead to the leverage of synergy to organizations in a mergers and acquisitions context. This factor is *proactive IS integration.* Conducted research concerning proactive IS integration is limited and no conceptualizations have been done. This has a negative effect on the applicability of the term in order to describe IS integration from an academic as well as practical point of view. The main research question stated in the thesis is: *Does proactive IS integration lead to the leverage of synergy effects?* In order to give an account of this question a working concept of the term proactive IS integration is developed. The study presents theoretically deduced concepts influencing proactive IS integration. With these concepts as the base, a case study involving the Swedish organization Trelleborg Industrial Hose's acquisition of the French company Dynaflex, built on qualitative interviews was conducted. The study result involves an extension to the theoretically deduced concepts, based on a mismatch between theory and findings, which involves knowledge and prior experience of IS integration as essential factors, leading to the proposition of regarding proactive IS integration as a *capability*.

Keywords

Proactive IS Integration, Information System Integration, Mergers and Acquisitions, Synergy

Preface

It has been a very learning and inspiring experience to work with this thesis and we think that we will have sufficient use of the knowledge and experiences gained through out this study in the future.

This thesis is targeted towards other people who aim to conduct studies within the fields of mergers and acquisitions and information system integration. Further we hope to encourage more people to gain interest in these fields.

The fields of mergers and acquisitions and information system integration are fields with a diversity of viewpoints thus some readers may not fully agree on what we argue for in this thesis. Opinions concerning the content and structure of this thesis are most welcomed.

We would like to convey our thanks to all the people who have helped us gain the theoretical and empirical material which forms the base of this thesis and especially the interviewees at the case company.

At last we would like to convey our sincere thanks to our supervisor Professor Sven Carlsson, our mentor Stefan Henningsson and our fellow students for contributing with useful opinions concerning content and structure of the thesis.

Lund, January 9th, 2007

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1 Introduction

This study aims to examine aspects that lead to potential synergies by a proactive Information System (IS) integration in a mergers and acquisitions (M&A) context. In order to collect data from a real implementation, this study involves a case study performed at the Swedish business group Trelleborg whose sub-unit, the Trelleborg Industrial Hose made the acquisition of Dynaflex, a small French company active in the same market as the Trelleborg Industrial Hose (industrial rubber hose products). The study involves the integration process of the information System at Dynaflex into Trelleborg Industrial Hose's ERP system after being acquired.

Surveys conducted the last decade indicate a continuous stream of M&As, both planned and realized (Kumar et al, 2002). The period between 1998 and 2000 showed an extraordinary activity with a nearly $4 trillion worth of M&As deals closed which is more than the total sum of deals for the past 30 years (Mehta & Hirschheim, 2004). In 2004 the total number of M&A exceeded 35 000 operations with a purchase price of 1 900 billion euros (Carlsson & Henningsson, 2006). The expansion of the global marketplace, increased deregulation and higher level of competition are arguments which speak for a continuing of M&As acts in the foreseeable future (Kumar et al, 2002).

An acquisition of another company can involve both positive and negative effects for the organizations involved. Along with the increasing number of acquisitions, organizations nowadays have gained an insight concerning problems that can emerge along with the acquisition situation itself. The expectations and goals which the involved companies have, can be numerous and often highly placed. The most common expectation is value creation through synergy, like cost advantages, exchange of production technology and knowledge (Kleppestö, 1993).

According to Schweiger (2002) there are two ways of creating value through acquisitions, either by acquiring a company for a price less than its actual value or by utilizing synergies created by the companies merging. In this study the focus will be on the second possible way to create value, the utilization of synergies, as acquiring a company for less than its actual value does not present a suitable situation for studying the effects of IS integration on the leverage of potential synergies. Lubatkin (1988) and Chatterji et al. (1992) state that many M&A deals are presented to shareholders as a value creating strategy, despite this, many companies fail to reach the potential synergies necessary to create the previously anticipated value.

There are three different perspectives on M&A in the academic literature, which explain different facets of the phenomenon. The first view is from a corporate strategy point of view, the second perspective is organizational oriented and then there is the process oriented view on M&A. As the strategic view did not sufficiently explain the failure of raising potential synergy effects which could be created by the M&A deals, a new dimension was added, the organizational Fit. This dimension was added as a perspective to offer a discussion about how well two organizations fit in order to leverage these potential synergies. As the actual implementation of M&A is a complicated activity, the process oriented view suggests that the process of the M&A is an important factor which affects the result of the M&A (Risberg, 2002). This view represents the standpoint that not only strategic issues and organizational fit determine the leverage of synergies, but the actual 'how' it is done plays an important role (Henningsson, 2006).

Since the beginning and the middle of the 1990's there has been anecdotal evidence from executives and management consultants that there are also other causes for M&A failure than those prior mentioned. These causes are IS related and cover different aspects like the evolution of corporate

information systems, infrastructure requirements, the high cost of integration and information technology systems and the reluctance to define information system and information technology issues in the ex-ante stage of M&A (McKiernan & Merali, 1995). Since then this topic has been brought up in academic research but literature and evidence in this domain are still incomplete. Despite this fact, academic literature seems to come to the agreement that IS integration plays an important role for the success of M&A (Kumar et al, 2002, McKiernan & Merali, 1995, Mehta & Hirschheim, 2004, Merali & Mckiernan, 1993, Stylianou et al, 1996, Weber & Pliskin, 1996).

McKiernan & Merali (1995) suggests that there are two ways to deal with IS integration in M&A, *reactively* and *proactively*. It is *reactive* when IS have to be changed to enable other operational considerations. It is *proactive* when the IS is the facilitator for organizational change or in other words enables organizational change. McKiernan & Merali (1995) further states that IS integration in the M&A process normally is used reactively, although to increase chances for successful IS integration and gain potential synergies IS integration should be used proactively.

In the Lloyds and TSB merger discussed in Mehta and Hirschheim (2004), Lloyds and TSB were unable to integrate their back-office systems resulting in bank tellers unable to access a common set of banking services. The expected synergies were not realized (Mehta and Hirschheim, 2004). On the other hand, the success story of Sallie Mae's acquisition of USA Group was the result of a successful post-merger IS integration (Brown et al., 2003). This suggests that IS integration *does* in fact contribute to the overall success of an M&A deal (Mehta and Hirschheim, 2004).

1.1 Basic terminology

The terms we explain in this section are the basic vocabulary of our thesis and in order to rule out any misunderstandings we clarify them at this early stage of the thesis.

1.1.1 Mergers and acquisitions (M&A)

The word *merger* as the word implies, means a consolidation of two companies/organizations that are relatively equal concerning size and resources. The underlying strategy is defensive and part of an effort to protect and maintain the business. The reason for merging could be stagnation or unprofitability e.g. prior competitors seek support in each other (Markus, 2000). An *acquisition* is the takeover of one firm by another company (the acquiring firm) and is often part of an offensive and expansive strategy where a resource-wise larger company acquires a minor one. The acquiring firm chooses to expand externally by acquiring an organization which is already developed within the actual business area instead of aiming at internal growth (Markus, 2000).

There are also different legal implications for these terms but they are not relevant for our study as they are not the focus of this study and not related to the subject in a way that needs to be taken account of. In reality there is a continuous scale between the two end poles, *merger* and *acquisition* and most acts would be placed somewhere in between them rather than being clear cut.

1.1.2 Information system (IS)

Andersen (1994) defines the term information system by considering the two words: *information* and *system.* The word information means enlightenments about real or hypothetical conditions whilst the meaning of the word system involves something that is organized where a logical pattern can be discerned. Based on the above stated we can argue that an affected definition of the term information system can be: *a system for handling different types of information.* Andersen (1994) further states that there are different types of information handling, such as: *Collect, Process, Store, Transfer and Present.*

By considering these different types of information handling we can more clearly define the term information system as: *a system for collecting, processing, storing, transferring, and presenting information.* This definition is further supported by Alter (2002) who defines an information system as a work system whose business process is devoted to *capturing, transmitting, storing, retrieving, manipulating* and *displaying* information and thereby supporting other work systems.

An information system does however not possess a justified right to exist in itself but does rather exist in order to serve a business (Andersen, 1994). An information system should enhance the communication between humans, and humans are an essential part of an information system (Andersen, 1994). That humans are an essential part of an information system is a view also shared by Alter (2002) who argues that an information system should be seen as a system in which human participants and/or machines perform a business process using information, technology and other resources to produce products and/or services for internal or external customers. An information system should both support its organization and at the same time be a part of it by collecting and distributing internal as well as external information (Andersen, 1994, Flensburg & Friis 1999).

Based on the above discussion involving different views of information systems we can state that an information system handles and processes information with or without the help of computers, and always includes humans and processes to a certain extent.

1.1.3 Information system integration

To integrate something involves coordinating and unifying. There exist different parts which together would improve the work rather than working each by them self. In order to succeed with integration it must be conducted on the basis of knowledge about parts and entirety. To be able to establish a sustainable information system it is of importance to identify *what* should be integrated with *what* (Nilsson, 2000). Information, methods and processes are example of things that can be integrated (Turban, 2001).

To integrate information systems involves unifying previously isolated information systems, which never were intended to work together, in order to reach an entirety or a complete information resource for the organization. Information systems integration is seen as a possible solution for problems connected to organizations' internal processes with the aim of streamlining processes in order to make the organization as whole more efficient (Sandoe, 2001).

1.1.4 Organizational integration

According to Haspeslagh and Jemison (1991) organizational integration is the most important factor to make the acquisition work. Value can only be created when the two firms come together and work towards the acquisition's purpose. Which kind of integration is needed to create value is depending on the economic source. According to Shrivastava (1986) integration can take place on three different levels, namely: *procedural, physical, and managerial/sociocultural.* On the procedural level the objective is to homogenize and standardize work procedures. On the physical level product lines and production technologies are integrated. On the managerial/sociocultural level corporate cultures and managerial viewpoints are merged.

1.1.5 Synergy

The word synergy stems from the Greek word "*synergos*", which could be translated as "*working together*." In Business usage, synergy is usually defined as the "*2 + 2 = 5*" effect to explain the fact that corporations seek new combinations of factors with a combined performance that is greater than the sum of its parts (Ansoff, 1965). This will be further explained in the theoretical chapter.

1.2 Problem space

The aim with this discussion of the problem space is to highlight relevant perspectives and aspects within the area of mergers and acquisitions and information systems integration and thus lead to a problem definition. We argue that a discussion of the problem space is essential in order to approach the problems that are linked to the subject.

1.2.1 Information system integration in M&A: A strategic perspective

The strategic point of view is centered on creating additional value for shareholders and can be summarized and explained through Porter's Industrial Organization (Porter, 1985), Barney's Resource Based View of the Firm (Barney, 1991) and Hedman and Kalling's Strategic Process Perspective (Hedman & Kalling, 2002). All of these perspectives describe the strategic potential of the M&A's act as additional value creating for stockholders.

Synergy is the central motivation for Mergers and Acquisitions as the leverage of synergies is one of the anticipated effects of M&A deals. Companies believe in mergers and acquisitions as a sound strategy for survival and growth and reasons to merge with other companies or to acquire them can be stated as (Kumar et al, 2002):

- Rapid growth in size and strength
- Increase of market share
- Acquisitions of new products, patents, technologies, talents, and/or geographical territories
- Economies and efficiencies on large scale

Succeeding with M&A becomes essential considering the sums involved and this means finding the right merger partner and achieving the expected synergies. Reaching success in this context means realizing the sought after synergy effects and a post-merger increase in share price and revenue growth rate (Mehta & Hirschheim, 2004). This requires strategic and financial analysis of the situation and of the companies affected by the M&A (Markus, 2000). According to Mehta & Hirschheim (2004) a Business Week study (October, 2002) announced that 61% of the acquisitions completed since 1998, decreased shareholder value for the acquiring firm. Referred to Henningsson (2006) more the 50 % of all M&A fail in reaching the profits that were expected by the companies, which is a good reason for studying this issue.

There are also problems how to measure the results of an M&A due to the fact that the outcome tends to occur many years from the occasions of the M&A and the effect of the merger must be isolated from other environmental changes, like other mergers e.g. Because of this delay it can be difficult to connect the outcome to the M&A instead of being results of changes in the market or from a changing environment (Lubatkin, 1983, Markus, 2000).

There are different possible reasons for M&A failures and as McKiernan and Merali (1993) argue, acquiring another company is associated with huge risks and often it involves substantial amounts of money. In order to reduce risk, an investigative study is often carried out by acquiring organizations to evaluate the acquisition target, this study is called due diligence. The failure to conduct an evaluation of the acquired organization's information system infrastructure during the due diligence stage is often stated to be a reason for why information systems integration contribute to post-acquisition problems (Merali & Mckiernan, 1993).

Kumar et al. (2002) follows the same line of argumentation, addressing the challenge of post-acquisition IS integration, IS managers should present an assessment of IS fit for the involvement in the earliest phase of the M&A life cycle. Kumar et al. (2002) argues that early involvement is essential to set realistic expectations regarding integration and achievement of economies of scale, to define the strategic role of IS in supporting overall M&A objectives and to identify integration problems early. It is further stated in Kumar et al. (2002) that Buck-Lew et al. (1992) contend that IS fit should be assessed in determining M&As success in the initial M&As life cycle along with assessing strategic fit and organizational fit and that such an assessment can help to create realistic expectations about the M&As and to provide insights into the complexities of the integration efforts.

In the real world, however, IS normally gets little involved in M&As initial phases while required to deliver integrated systems quickly-out of the loop and under the gun. IS typically enters the M&A process during the transition or integration phase as an implementer rather than a business partner, missing vital background information about the planned systems strategy (Fiderio, J., 1989) and expecting to deal with system incompatibilities quickly with little warning (Stylianou *et al.*, 1996). IS managers often face problems concerning time constraints, as well as orders to integrate complex systems and that with no interruption in service quality or performance (Kumar et. al., 2002). Hence the consequence of not involving IS in an early stage of M&A, will among other issues be senior management dissatisfaction and unrealistic expectation for IS in cost savings, speed and ease of integration, and maintenance of uninterrupted service. Stylianou *et al.* (1996) further suggests that the need to integrate new systems quickly could be an extremely difficult task, because lack of planning results in shifting priorities relatively to the development of application projects and dealing with redundancy. Therefore, the integration of IS becomes a complex and time consuming task. Without early involvement of IS, senior management often holds unrealistic expectation to the speed and complexity of IS integration, impeding the effectiveness and efficiency of IS integration and even destroying the overall M&A financial and strategic goals (Kumar et. al., 2002).

Stylianou et al. (1996) reinforces this view by arguing that from top to bottom, corporations depend on their information systems (IS) departments to provide timely and accurate information, yet IS and the IS area tend to be ignored in the merger/acquisition planning process. Hence an IS fit should be determined early in the acquisition process, and IS professionals should be fully involved in the entire process so that problems concerning IS integration can be identified early, thereby increasing the chances for a more successful integration (Buck-Lew et al., 1992).

As mentioned in the introduction, the studied literature finds IS integration in the M&A process normally used reactively, although to maximize chances for successful IS integration and gain potential synergies IS integration should be used proactively (Merali and Mckiernan, 1993). However, this conclusion is only based on studies of M&A where IS integration is used reactively, which lays the ground for this thesis. Even the terms proactive and reactive do not have a congruent, unified established definition in the academic literature and therefore form the central point of focus for our investigation of the theoretical material available up-to-date.

1.3 Research question

From the discussion above, we state a research question that is based on the current status of the research field:

Does proactive IS integration lead to the leverage of synergy effects?

First, it should be noticed that although several authors emphasize the need for proactive use of IS integration none of them explicitly states what is characterizing a proactive IS integration. Therefore we need to develop a working concept of proactivity which states what proactive IS integration means. After this we are able to examine whether our case company complies with our concept of proactive IS integration.

1.4 Purpose

In general terms the purpose of this thesis is to contribute to the existing theory of IS integration in M&A by extending the current theory in this field with an enhanced view of proactive IS integration in M&A. More explicitly, *this study seeks to describe and explain how proactive IS integration can affect the relationship between IS integration and the M&A process by potentially leveraging synergies.*

1.5 Research context

Since two years there has been a cooperation between Trelleborg and Lund University regarding research in economic fields, benefiting for both commerce and the academic world, such as Mergers &

Acquisitions (M&A) for example. As one part of this cooperation Trelleborg supports two PhD students and their research projects. One of these projects, the doctoral dissertation of Stefan Henningsson, examines Information System Integration in Mergers and Acquisitions.

The Trelleborg Group has shown a great desire to undertake these studies, which is further undermined by the fact that they finance these studies and anticipate the use of outcomes of these studies and research. This and the fact that our thesis is part of a larger research project, contributes to the relevance and adds to the importance of our master thesis, which is realized in collaboration with Stefan Henningsson as an empirical part of the concerned research.

1.6 Delimitation

We delimit our study to one single case. As mentioned earlier there are several legal factors related to the terms merger and acquisition and since those factors are not relevant to our study we have chosen to disregard them in order to delimit our study further. The scope is further narrowed through the focus of IS integration in an M&A context and not IS integration in general.

1.7 Thesis Stucture

This section shows the structure of this thesis. It gives an introduction to each chapter, and the rationale for its inclusion in this thesis.

Chapter 1: Introduction
This chapter introduces the background to this thesis, i.e. puts it into its theoretical as well as practical context. The problem space introduces the reader to the purpose of the thesis which motivates the following research question.

Chapter 2: Methodology
In this chapter, issues concerning our general approach towards scientific research, and we discuss our scientific point of view. The chapter explains the reasons for applying a single case study as research strategy. The chapter further describes the methods we have applied for collecting theoretical and empirical material for this thesis.

Chapter 3: Proactive IS integration in mergers and acquisitions
The theories that form the theoretical framework are described here, as well as how they are put together and why they are relevant to the understanding of this matter. The chapter ends with a model of influencing factors on proactive IS integration for capturing synergy, which is used to analyze the empirical findings.

Chapter 4: Findings
The empirical findings from the case study are presented here. The chapter starts with a description of the case company. Then we move on to report the information we gained through the interviews

conducted. The empirical findings are in this chapter structured according to the theoretically deduced model presented in chapter 3.

Chapter 5: Analysis
In this chapter we analyze the empirical findings of chapter 4 in regard to the influencing factors on proactive IS integration for capturing synergy compiled in chapter 3. We classify and match the findings of chapter 4 to our theoretical model presented in chapter 3.

Chapter 6: Discussion
This chapter discusses the analysis of the findings as well as points out mismatches we discovered between the existing theories and the analysis of our empirical material i.e. how well our theoretical framework lived up to the intentions, and what should be done to improve it.

Chapter 7: Conclusions
This chapter summarizes the findings of the study and highlights the most important findings. This chapter also reconnects these findings to the purpose of our study and the stated research question. It also proposes further research areas.

2 Methodology

In this chapter we want to clarify issues concerning our general approach towards scientific research and our scientific viewpoint. This chapter further aims at describing the methods we have applied for collecting theoretical and empirical material for the thesis.

2.1 Research method

The choice of which method of research to apply often stands between a quantitative or a qualitative approach. In many scientific contexts it is often demanded that the method of data collection should be quantitative and that the findings should be presented in numbers. The following statements highlight this approach;

> *"Compared to qualitative methods quantitative methods have a privileged position thus quantitative methods rely on a mathematical ground for collection as well as analysis of data. In this sense it is easier to apply a quantitative method"* (Edling and Hedström, 2003, p.11)

So does this mean that qualitative methods of research are not appropriate for scientific methods of data collection? Miles and Huberman (1994) states that qualitative data, usually in the form of words rather than numbers, have always been the staple of some fields in the social sciences, notably anthropology, history, and political science. Miles and Huberman (1994) further state that from the mid 1980s and forward more researchers in basic disciplines and applied fields (psychology, sociology, linguistics, public administration, organisational studies, business studies, health care, urban planning, educational research, family studies, program evaluation, and policy analysis) also have shifted to a more qualitative paradigm.

> *"The findings from qualitative studies have a quality of undeniability.*
> *Words, especially organised into incidents or stories, have a concrete, vivid, meaningful flavour that often proves far more convincing to a reader, another researcher, a policy maker or a practitioner than pages of summarised numbers"* (Miles and Huberman, 1994, p.1)

As we can see there are contradictory opinions about what an appropriate method of research is. We however argue that the choice of which method to apply foremost should depend on the current state of research within the chosen research area i.e. already existing theory, research question stated and the nature of the needed data to answer the stated research question/questions.

In our case we have chosen to apply a *qualitative research method*. We base the choice of research method on the fact that our purpose which involves *to describe and explain how proactive IS integration can affect the relationship between IS integration and the M&A process*, is highly based on peoples' opinions

and interpretations, thus a qualitative approach is the most appropriate one (Miles and Huberman, 1994).

Through interviews we have sought to obtain an understanding about the characteristic of the acquisition process and information system integration process, at the case company. The awareness of the risks concerning misinterpretations when applying a qualitative method is not something that has discouraged us from using the concerned method. We argue that the qualitative method gives us reinforcement in what we want to mediate, which a quantitative method can not help us achieve due to the fact that the acquisition and IS integration process is highly based on peoples' subjective judgements in different situations. This is confirmed by Holme and Solvang (1991) where it is argued that:

> *"If one should be able to understand the situation which individuals, groups or organisations find themselves in one has to try becoming close in life to them, this is just the purpose of the qualitative approach"* (Holme and Solvang, 1991, p.100).

Bryman and Burgess (1999) argues that qualitative methods are attempts to overstep the subjective-objective relationship that distinguish the natural science, and this is possible to reach as a researcher through placing your self in the study persons' situation and view the world from their perspective (Bryman and Burgess, 1999).

In order to obtain a sound understanding about how a proactive IS integration can be established and what problems may rise in connection to this, we have pursued a qualitative research method where the main part has involved conducting interviews with the personnel at an organisation, which possess experience and sound knowledge within the actual area. This has given us closeness to the studied problem space which we have considered necessary in order to gain sufficient understanding about the subject.

To strengthen the information which emerged from the conducted interviews we have interpreted these and reviewed literature sources. We have had the possibility to continuously analyse the obtained material in between the interviews in order to detect aspects which were not considered earlier. This possibility is not given in the same way with quantitative studies where working up the material usually is done when everything is collected (Bryman and Burgess, 1999).

Our interviews have been based on dialogs with the interview objects, during an interview the social interaction itself should be interpreted first (Kvale, 1997). How the interviewee behaves, speaks, if he is nervous or feels controlled by the interviewer is signals that we have tried to interpret. Thereafter we have conducted an interpretation of the interview transcript itself. The interview transcript was based on the interviewees' standpoints in different questions, and through these interpretations we argue that a broader and deeper understanding has been gained in spite of the fact that some parts of the interpretation have been affected by our own values and standpoints.

2.2 Objectivity

To strive for a high level of objectivity is often considered to be of great importance within scientific research. Since the qualitative research interview can be seen as an ensemble between human reflections, it is often stated that it lacks objectivity (Kvale, 1997). But the question is, what does

objectivity really mean? If the meaning of objectivity solely means that the task of the researcher is to reflect the nature of the object, and simply disregard his personal impressions, it is then possible to state that the qualitative research does not reach objectivity. The researcher always has his own theoretical frameworks, and unavoidably makes interpretations accordingly:

> "*This is also why the interpretation always possesses a relative objectivity, never an absolute one"* (Alvesson and Sköldberg, 1994, p.121).

In the role as researchers we however argue that it is not necessary to reach this kind of absolute objectivity in order to produce a scientific report, and neither is this our intention. Our intention is rather to reflect information systems integration from a perspective that can result in an enhance theory about what a proactive IS integration means and how it affects the acquisition process.

Bryman (1997) argues that hermeneutic researchers approach the object of research subjectively on the basis of own pre-conceptions. This pre-conception and the knowledge the hermeneutic researchers posses is often considered by themselves as an asset and not an obstacle in order to interpret and understand the research object (Bryman, 1997). Holme and Solvang (1991) argue as follows:

> *"It is not possible in either everyday situations or in research to liberate your self from these theoretical and subjective frameworks. Every research situation is with necessity characterised by this. Therefore the understanding that is based upon ones educational background will be objective in proper sense"* (Holme and Solvang, 1991, p.104).

2.3 Validity, reliability, generalizing

Within science, the importance of validity and reliability is often mentioned. Admittedly verification and validation does not play a decisive role within interpreting research, and Alvesson and Sköldberg (1994) argue that the result of the research does not stand and fall with this; however we still think that this is a concept that is important to mention.

> *"Then how do one know if the gained interpretation is true or not, if it corresponds to the reality or not? The answer to this question is that it is wrongly posed, while truth for hermeneutics is not a question of static correspondence between interpretation and facts […] No one can uphold that a certain interpretation is final or even temporally 'true' in any sense of correspondence between theory and facts; however arguments saying that a certain interpretation is reasonable or even the most reasonable can be submitted with the time we are living in and the questions at issue that is at our disposal as a starting point"* (Alvesson and Sköldberg, 1994, pp.167-168).

We talk about reasonableness and reliability in those interpretations that we have made, and do not strive for total validity and reliability.

> *"Validation of qualitative research, method and analysis include control of the trustworthiness, an assurance that there is empirical evidence and that one has made a reasonable interpretation."* (Svensson and Starrin, 1996, p.211).

Since we have concentrated our selves at one specific case we realize that the ability to generalize the study result is limited, however we argue that the logic behind the conclusive model of our study is generically applicable to other organizations in mergers and acquisition contexts.

2.4 Informed consent

The opening question at all conducted interviews involved asking the interviewee if he/she wanted the information that emerges from the interview to be treated as confidential. Due to the fact that the interviewees did not whish for us to do so we chose to treat all the interviews as non-confidential. An important issue for us was to ensure that the interviewees would not hesitate to present valuable opinions and information due to the possibility of sensitive information being revealed. Since the interviews were treated as non-confidential, the name of the company has been included with permission of the concerned. However we feel it is more appropriate to address the interviewees by position rather than names and since the position of the respondents is more relevant to the reader we address all the interviewees by position.

2.5 An abductive approach

We have chosen to pursue an abductive approach in order to work up the theoretical and empirical material collected for the thesis. The abductive way is a combination of an inductive and deductive approach (Ezzy, 2002).

An inductive approach involves drawing common conclusions on the basis of empirical facts. This is done through a somewhat imprecisely and vaguely defined presentation of the problem. The main purpose of an inductive approach is to obtain a good overall perspective of the research subject (Bryman and Burgess, 1999). A deductive approach involves drawing logical conclusions that are considered to be valid if logically coherent. However they do not have to be true in the sense of corresponding to reality (Ezzy, 2002). The abductive approach is a combination of the two prior mentioned ones. When applying an abductive approach the researcher uses the empirical facts as a base but does not reject theoretical pre-conceptions. During the research process there will thus be alternation between prior theoretical and empirical material, which leads to the fact that both can be reinterpreted through the support of each other (Ezzy, 2002).

Our approach is deductive to a certain extent as our way of reasoning takes a starting point in relevant theoretical references. Our aim is to obtain an overall perspective of the problem space thus we have to approach the problem space somewhat unprejudiced. This makes our approach inductive to a certain extent. Since we are applying a combination of both an inductive and deductive approach, our course of action becomes abductive.

With an abductive approach it is thus possible to use theory in prior literature as a source of inspiration for discovering patterns that provides an understanding for the research subject (Ezzy, 2002). We have used existing literature to gain an understanding about the problem space as it is to

date, to develop a problem definition in the form of a research question and to deduce theoretical concepts for analyzing the empirical material. Through analyzing our empirical material with the help of our theoretically deduced concepts we have been able to enhance the current view of IS integration in M&A by further developing the existing theory.

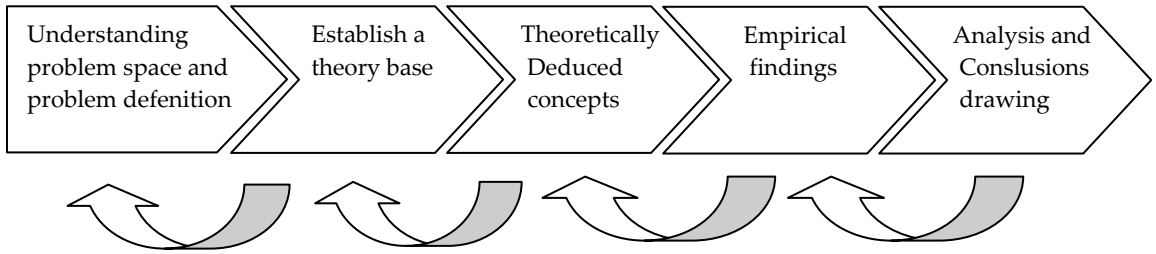

Figure 2.1 The Research Process; An abductive approach

2.6 Case study as research strategy

We choose to apply a case study as research strategy as our aim is to highlight one specific research unit which we intend to analyze. Case studies are suitable as a research strategy when the aim is to study a process (Denscombe, 2000). Since our aim was to study the nature of the information systems integration process this further strengthens our decision to conduct a case study. Our aim was further to study the IS integration process in a real and natural environment (Yin, 1994), and a case study is a suitable research strategy for getting close to an IS integration process in a natural environment. Also when a study is of descriptive nature as our study is a case study is particularly suited (Yin, 1994). This is more evident when revisiting the purpose of the study: *this study seeks to describe and explain how proactive IS integration can affect the relationship between IS integration and the M&A process by potentially leveraging synergies.*

When conducting a single case study the selection of case is highly important (Miles and Huberman, 1994). The single case which this thesis is based on is a subunit of the Trelleborg Group namely Trelleborg Industrial Hose's acquisition of France based company Dynaflex in which Trelleborg Industrial Hose integrates the existing information system at Dynaflex into its own ERP system called Movex. The case study was performed in November/December 2006 at Trelleborg Industrial Hose's local office in Trelleborg, Sweden.

Through the already existing relationship between the Trelleborg Group and Lund University where the Trelleborg Group has required a study on how an acquisition process is affected by the IS integration process itself when acquiring another company, through our mentor, Ph. D. student Stefan Henningsson, Trelleborg Industrial Hose was proposed as a an alternative case study object. The organization was more thoroughly investigated through its website, through the annual report and through Henningsson (2006) where earlier acquisitions made by Trelleborg Indutrial Hose is described. When Studying Henningsson (2006) we found that Trelleborg Industrial Hose made an acquisition of a French company named CMP/Kléber. This acquisition was made in 1996, the IS integration in this case was achieved after nearly nine years and in the case of the Dynaflex acquisition which was made in 2004 it was achieved after six months. What influencing factors could contribute to

such a difference in time? What kind of IS integration approach was applied in the Dynaflex acquisition case? These were the fundamental thoughts behind considering Trelleborg Industrial Hose as case study object.

We want to clarify that the aim was not to conduct a comparative case study, this is due to the fact that the acquisition target organizations differs from each other in both cases in regard of size in such a matter that this would not be possible. Instead our aim is simply to explain that the Dynaflex acquisition was a case of successful IS integration which might be an indication of a proactive IS integration and we found this to be a motivation for investigating whether this was the case or not. Hence Trelleborg Industrial Hose's acquisition of Dynaflex was found suited for the purpose of our study and Trelleborg Industrial Hose was selected as our case study object. The specific case and organisation is described in more depth later on in the thesis.

As mentioned earlier we are of the opinion that our prior experiences, values and frame of reference affect our standpoints. The fact that we in agreement with our mentor deliberately have chosen to contact a certain company prior to others when selecting a research object is something that we consider as a natural part of the qualitative research methodology. We however do not think that this has affected the reasonableness or reliability of the study.

2.7 Data collection procedure

The empirical part of this thesis is based on the interviews we have conducted. Information system integration is a field where discussions quite recently have begun to seriously flourish, thus our opinion is that a good understanding is gained by interviewing individuals that are working within and are familiar with the subject.

When it comes to selecting respondents for qualitative studies the aim is to find individuals with a variety of skills. The selection should thus be heterogeneous to a certain extent (Trost, 1997). To make the selection heterogeneous Trost (1997) presents a way of strategic selection. Strategic selection involves making a selection based on the pre-conceptions and prior theory that the researcher possesses at the initiation of the research process (Trost, 1997). The first step in a strategic selection is to determine certain variables that are of theoretical relevance. Based on the conducted literature study i.e. the theoretically deduced concepts, it was concluded we need respondents with sufficient knowledge about the Dynaflex acquisition process concerning *Pre-merger relationship:* What relation existed between the two companies before the acquisition?, *Degree of friendliness*: Did the target unit cooperate in order to provide the necessary understanding of the firm and its processes?, *Organizational autonomy and strategic interdependence*: How are the units interconnected after the acquisition?, *Information system layers*: What layers of the target company's information system need to be integrated?, *IS integration architecture*: What IS integration architecture needs to be implemented in regard to the IS layers that need to be integrated?, *Synergy*: In regard to previous factors, what synergies were gained, or how are synergy effects affected by the IS integration?.

Accordingly, in consultation with Trelleborg Industrial Hose and Stefan Henningsson three respondents with different positions, who all were members of the IS integration team during the Dynaflex acquisition was chosen, as follows:

- Interview 1: Chief Executive (IS and Operations): male, interview took place at the company's local branch office; November 20th, 2006 between 9.00 and 10.00, Trelleborg, Sweden.

- Interview 2: Junior IS manager (Process mapping): male, interview took place at the company's local branch office; December 13th, 2006 between 15.00 and 15.45, Trelleborg, Sweden.

- Interview 3: IT manager (Hardware integration): male, phone interview, January 4th, 2007, between 9.00 and 9.45.

Since the focus of our study is on the nature of the IS integration and the leverage of synergies connected to this and due to the fact that no personnel working at Dynaflex prior to the acquisition participated during the IS integration process until end user training there was no need to include personnel working at Dynaflex prior to the acquisition as interviewees.

We have been aware of the possibility that conceivable incongruities within the area that are existing at the company might not have emerged during the interviews, this due to the fact that the company to a certain extent has controlled what individuals we have been given the opportunity to interview. To obtain a correct opinion as possible we have aimed at comparing the empirical material to studies of literature and articles which discuss IS integration and M&A. The interviews have been conducted as dialogs where the interviewees have shared their experiences and opinions.

There are four main types of interviews: unstructured, structured, semi-structured, and group interviews (Preece et al., 2002). The first three types are named according to how much control the interviewer imposes on the conversation by following a predetermined set of questions. The fourth involves a small group guided by an interviewer who facilitates discussion of a specified set of topics (Preece et al., 2002).

The most appropriate approach to interviewing depends on the evaluation goals, the questions to be addressed, and the method of research adopted. If the goal is to gain an overall impression of a subject, then an informal, unstructured interview is often the best approach. But if the goal is to get feedback about a specific issue, then a structured interview or a questionnaire is often better. This is because the goals and questions are more specific in the latter case (Preece et al., 2002).

Since we have adopted a qualitative method, the choice of questionnaires naturally disappears. Since our aim is to obtain both an overall understanding about the acquisition it self and answers about specific issues concerning the IS integration processs we chose to conduct semi-structured interviews. Semi-structured interviews combine features of structured and unstructured interviews and use both closed and open questions. For consistency the interviewer has a basic script for guidance, so that the same topics are covered with each interviewee. The interviewer starts with pre-planned questions and then probes the interviewee to say more until no new relevant information is forthcoming (Preece et al., 2002).

An interview template should according to Preece et al. (2002) involve 5 main sessions namely: *Introduction, warm-up session, main session, cool-off period,* and a *closing session*. With the above mentioned base, a pre-planed interview template was made (Appendix) as follows:

1. First an introductory session in which we introduce our selves and explain why we are conducting the interview, reassure interviewees about the ethical issues concerning confidentiality, and asked if they mind being recorded.

2. A warm-up session where easy, non-threatening question come first. These include questions about information such as "What position do you have at the company?", "How long have you been working within the organisation?"

3. The main session in which the questions are presented in a logical sequence with the more difficult ones at the end. Here we pose questions about the acquisition and also the questions about the IS integration process are included here.

4. A cool-off period consisting of a few easy questions such as "Do you have any additional opinion or information concerning the IS integration process connected to the Dynaflex acquisition that you would like to add?"

5. A closing session in which we as interviewers thank the interviewee and switch off the recorder, signalling that the interview has ended.

By not having too standardised questions and rather focusing on certain themes we have aimed at not controlling the interviewees to much. By applying this approach we believe that the gained answers correspond more to the interviewees' standpoints and associations concerning the subject. The advantage with this approach is that we have avoided controlling the gained answers to much compared to if the interview solely would have been built up on highly structured questions. The disadvantage is that it sometimes can be difficult to know when to change on to a new theme.

Essential parts of the interviews where transcribed afterwards. Interpreting the interview material has been further facilitated through the use of audio recording equipment in the form of a Mini Disc player.

2.8 Secondary data

Heaton (1998) states that secondary analysis of qualitative data involves the use of existing data, collected for the purposes of a prior study, in order to pursue a research interest which is distinct from that of the original work; this may be a new research question or an alternative perspective on the original question.

Secondary data in the form of recorded interviews from the prior acquisition of French company CMP/Kléber made by Trelleborg Industrial Hose in 1996 has been provided to us by Stefan Henningsson. This case is used as a part of the empirical findings in Henningsson (2006). The secondary data that we used covers the whole IS integration of the CMP/Kléber acquisition and provided us information about Trelleborg Industrial hose's European Movex system (ERP system) as it was back in 1996 and also how this system has been extended and developed by integrating units from different countries until present to facilitate future acquisitions. Since our own empirical findings did not provide information concerning the European Movex system as it was back in 1996 and how it has been developed and extended until present we found it essential to analyze the provided secondary data in order to gain this new information and to confirm what we already found.

Heaton (1998) classifies secondary analysis of qualitative data into three different forms: *Additional in-depth analysis:* Here a more intensive focus on a particular finding or aspect than was undertaken as part of the primary work is applied). *Additional sub-set analysis:* This form involves a selective focus on

a sub-set of the sample from the original study (or studies), sharing characteristics which warrant further analysis. *New perspective/conceptual focus:* The last form involves a retrospective analysis of the whole or part of a data set from a different perspective, to examine concepts which were not central to the original research (Heaton, 1998).

The form of secondary analysis that we have applied would rather qualify as a combination of *Additional sub-set analysis* and *New perspective/conceptual focus* than *one* of the above stated forms. This is due to the fact that we focus on a sub-set of samples from the original study (CMP/Kléber) sharing characteristics which warrant further analysis that is the relation between the IS integration role and leverage of synergies. However we also do a retrospective analysis from a different perspective to examine concept that was not central to the original research. This due to the fact that we use our own theoretically deduced model to analyze the empirical findings of the original study to analyze our own empirical findings and that we apply a strategic perspective which focus on proactive IS integration which was not central to the original research.

Heaton (1998) argues that the principles of, and guidelines for, the conduction of secondary analysis remain rather ill-defined. However, Heaton (1998) summarizes four key issues described in Hinds et. al. (1997), Szabo and Strang (1997) and Thorne (1994) concerning practical and ethical considerations to be taken into account when conducting secondary analysis of qualitative data:

Compatibility of the data with secondary analysis: This issue involves whether the data is amenable to secondary analysis. This will depend on the 'fit' between the purpose of the analysis and the nature and quality of the original data (Thorne 1994). The purpose of our secondary analysis was to gain additional information to our conducted interviews and also to verify the already gained information. Since semi-structured interviews were used in the original research (Henningsson, 2006) rich and varied data were produced which made it possible for us to gain new information. In total 12 interviews were made with CIO, business area IT manager, IS manager, plant manager, logistics manager, technical staff and users in the original research (Henningsson, 2006). We chose to analyze two of these interviews which we found relevant for our study. These include interviews with the CIO (Chief Executive in our case) and IT manager (also IT manager in our case) both involved in the IS integration team in the Dynaflex case as well.

Position of the secondary analyst: Was the analyst part of the original research team? This will influence the decision over whether to undertake secondary analysis and, if so, the procedures to be followed (Heaton, 1998). We were not part of the original research team however we have been provided access to the original data in the form of audio recordings in order to re-examine the data with the new focus in mind. This has been further facilitated by the fact that we have been able to consult with the primary researcher (Stefan Henningsson) as he acts as our mentor.

Reporting of original and secondary data analysis: Due to the complexity of secondary analysis, an outline of the original study and data collection procedures is of importance (Heaton, 1998). The original research was conducted as a qualitative case study due to the fact that the required kind of data to address the tentative framework's content and process based dimensions is dependent on a deep understanding on a contextually dependent development process (Henningsson, 2006). The selection of the CMP/Kléber case was decided in collaboration with informed members of the Trelleborg Group as this case was the first one and it was desired to cover a whole integration process that ended up in integrated systems (Henningsson, 2006). Another reason for selecting CMP/Kléber was the awareness that integration following an M&A takes considerable time, which was conformed in the CMP/Kléber case which took nearly 9 years (Henningsson, 2006). The case study data consist of interviews, observations and document studies. The empirical data was as earlier mentioned collected by

interviewing 12 key informants in the consolidated unit following a semi-strucured approach. (Henningsson, 2006).

Ethical issues: In the original research the respondents are always addressed with position and not names. The case company is addressed with its name with the permission of the concerned. Since the primary researcher continuously have read our work and thus been able to view how we have used the data we argue that the re-use of the data does not violate the contract made between subjects and the primary researchers (Heaton, 1998).

2.9 The use of literature sources

Our approach has been to collect sources of literature from authors with experience in both mergers and acquisition and information system integration research. Our collected material consists of scientific articles and literature composed by professionals within the area of mergers and acquisition and information system integration. In addition we have also used web sources that we found reliable in order to obtain theoretical material.

When searching for theoretical material we have used different keywords such as: *information system integration, mergers and acquisition, information system, organizational integration* concerning our problem space. We have used international as well as Swedish literature from different periods of time in order to gain a broad insight of the subject.

When collecting literature sources we have found it to be important to have a critical viewpoint towards the sources we found. We also found it important to be critical when interpreting the material it self. Some material is old and reflects a different outlook on life than that we have today. The purpose of the actual message given by the author varies and is important to understand. Much of the recent literature tends to glorify the trends that are present today. We have compared both old and recent literature in order to base a solid viewpoint.

2.10 Data analysis

Miles and Huberman (1994) define qualitative data analysis as consisting of three concurrent flows of activity: data reduction, data display, and conclusion drawing/verification. In this section we aim at describing how our work has emerged through these three flows of activities.

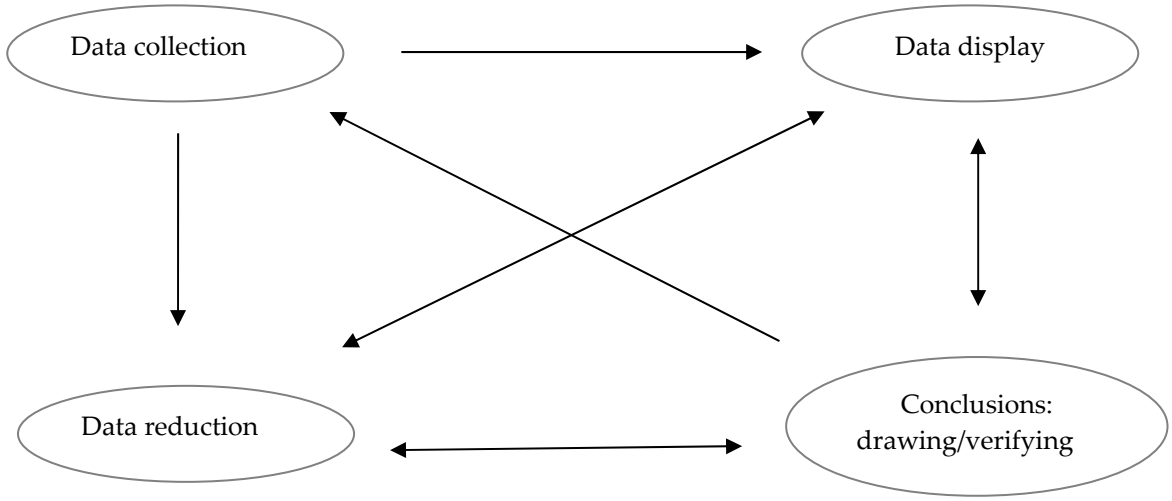

Figure 2.2 Components of Data Analysis; Interactive Model (Miles and Huberman, 1994, p.12)

2.10.1 Data reduction

Data reduction refers to the process of selecting, focusing simplifying, abstracting, and transforming the data that appear in written-up field notes or transcriptions (Miles and Huberman, 1994). This has been occurring throughout our study as we have decided which research questions, and data collection procedures to choose. As our data collection proceeded, further data reduction occurred by writing summaries, making clusters, and making partitions of the empirical material. Our aim with the data reduction has continuously been to subsume the empirical and theoretical material to fit in to a larger pattern. For example when posing the question whether a learning life cycle is applied at Trelleborg Industrial Hose in order to learn from prior acquisitions, the interviewees provided the same answer; that a learning lifecycle is applied, in such cases we do not provide every interviewee's individual statement but rather inform the reader that the interviewees replied similarly. Also when searching for definitions of terms like *information system, mergers and acquisitions, IS integration* etc. we found many literature sources providing similar definitions to the terms thus we selected and presented those we felt appropriate for the purpose of our thesis. Thus our approach has been to sharpen, focus, discard and organise the data in such a way that conclusions can be drawn and verified.

2.10.2 Data display

Generically, a display of data is an organized, compressed assembly of information that permits conclusion drawing and action (Miles and Huberman, 1994). We have mainly used extended text as a form of display of the collected data. However humans are not very powerful processors of large amounts of information; our cognitive tendency is to reduce complex information into selective and simplified gestalts or easily understood configurations (Miles and Huberman, 1994). Therefore we have also used pictures of models to clarify the context of different kinds and mediate a simplified and enlightening image of the reality that we have studied; examples are the previously shown pictures of the research process (figure 2.1) and displaying components of data analysis (figure 2.2).

2.10.3 Conclusion drawing and verification

When data reduction and data displays are made the remaining data analysis activity is to draw conclusions and to do verifications based on the reduced and displayed data. Our approach has as mentioned earlier, through an abductive approach been to use theoretical material along with the collected empirical data to draw conclusions.

We emanate from a theoretical framework created by Henningsson (2006) which aims at covering and integrating the three fields of M&A, IS integration and IS Integration in M&A and is thus a point of entry of our theory study and way for us to obtain a overall perspective of IS integration in M&A. Henningsson (2006) proposes this framework as a basis for further research and to provide a frame of reference for future studies in order to increase the amount of empirically founded studies within the areas of IS integration and M&A. Henningsson's integrated framework consist of six dimensions, namely: A: *Synergetic potential*, B: *Organizational integration*, C: *Intentions and reactions*, D: *IS type*, E: *Integration architecture*, F: *IS integration role*.

With the above mentioned theoretical framework along with additional studied theory describing the areas of IS integration and M&A, leads to the development of our own theoretically deduced model involving factors that influence a proactive IS integration approach, which is then used for analyzing the empirical findings of the study. Based on the analysis of the empirical findings a proposal of further development and extension both to our own theoretically deduced model and to the theoretical framework created by Henningsson (2006) is presented and discussed in the discussion and conclusion chapters.

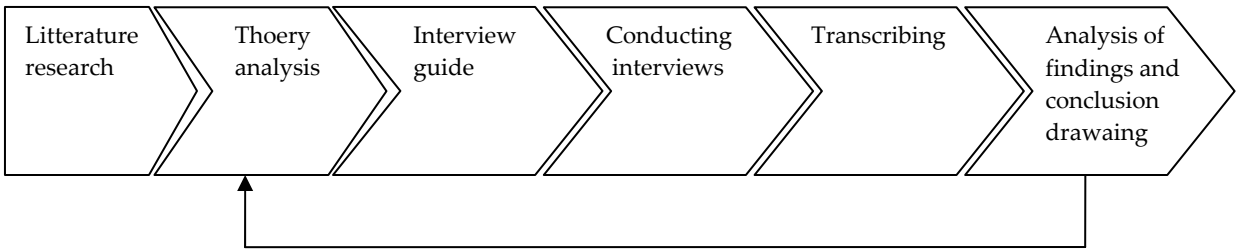

Figure 2.3 Data collection and Data Analysis; An iterative process

2.11 Summary

We have chosen to apply a qualitative research method with an abductive approach in order to work up and gain theoretical and empirical material for the thesis. A major part of this thesis is based on interviews we have conducted as a part of the case study. In addition we have also been provided access to secondary data in the form of previously recorded interviews involving a prior acquisition made by Trelleborg Industrial Hose which have been analyzed in order to confirm our own empirical material and also to gain new information. Concerning the use of literature sources the approach has been to collect literature and scientific articles from authors with experience in mergers and

acquisition and IS integration research. We have also used web sources that we feel are reliable in order to obtain theoretical material.

3 Proactive IS integration in mergers and acquisitions

This chapter sets the theoretical background of our thesis and includes academic theory that is relevant to our study and that will be used to describe and analyse the problem space from different perspectives. We have conducted a literature review and present the relevant understandings we have gained in this chapter which will represent the logic of the problem realm as we see it, and should therefore be seen as a logical background to our argumentation in the later chapters, such as Findings, Analysis, Discussion and Conclusions. The chapter will cover the fields of M&A, and IS integration in M&A. We begin with an introduction of proactivity, IS integration in M&A and then bring up theory relevant to explain different factors influencing proactivity in IS integration. In the end of the chapter we provide a summary of key concepts relevant to the issue which we intend to use for the analysis of the empirical material we collected.

3.1 An introduction to proactive IS integration

There are different definitions of the term *proactive* such as *"acting in anticipation of future problems"* (Encyclopedia Britannica, 2006), *"to act before a situation becomes a source of confrontation or crisis"* or *"controlling a situation by causing something to happen rather than waiting to respond to it after it happens"* (WordNet, 2006). The term *reactive* which is the opposite of *proactive* means *"marked by a reaction"* (Encyclopedia Britannica), or *"tending to react to a stimulus"* (Word Net, 2006).

When connecting these two terms to information system integration we can state without prior knowledge of the term that *proactive* IS integration means to consider information systems integration in anticipating of future problems or to plan the information systems integration process before the issue becomes a source of confrontation. *Reactive* information systems integration would hence mean that one would wait to consider the issue of IS integration until something happens which forces one to consider the issue.

McKiernan & Merali (1995) propose a definition of the terms proactive and reactive, that there are two ways to deal with IS integration in M&A, *reactively* and *proactively*. It is *reactive* when IS have to be changed to enable other operational considerations. It is *proactive* when IS are the facilitator for organizational change or in other words enables organizational change (McKiernan & Merali, 1995).

The definition of *proactive* IS integration by McKiernan & Merali (1995) does not explicitly include a time perspective in the sense of acting in anticipation of future problems but the definition of *proactive* states that IS creates opportunities for gaining competitive advantage or is the facilitator for organizational change, which means on a time scale that the organization is able to support the change *before* the business need appears. The definition of *reactive* states that, information systems have to be changed to enable operational considerations which in a time perspective means *after* the business need appears. To be more precise, this definition of *proactive* declares that, when IS are set up in such a way that when change in business needs arises and the IS supports this change, the role of IS

integration is called *proactive*. To what extent this support has to be available is not declared but this definition must allow adjustments to the system as there is no system which adapts itself to new business needs. But the extent of these adjustments must be seen in contrast to those necessary in *reactive* IS integration and therefore should be of such a character as for example business process re-engineering and not of a character such as restructuring the entire IS in order to implement the new business need (McKiernan & Merali, 1995).

Based on the discussion above we claim that *proactive* IS integration means that IS are set up in such a way, that the IS at the merged company supports organizational change during the operational and organizational integration and also supports future organizational changes. The delimitation to *reactive* is found in the condition that the IS supports this change and this means that the IS is capable to integrate information and processes without major changes. What qualifies as a major change is not defined in the existing literature, however the literature discusses this in a manner which suggests that the necessary changes are considered major when the existing system at the acquiring company needs to be either extended or changed in a way which inhibits the organizational integration of the target unit to such an extent which makes the outcome unpredictable regarding the interruption of business transactions in both the acquiring and target unit, which further has implications for the cost and time of the new unit's integration and thus affects the leverage of synergies.

This is the state of literature as described above and our aim is to enhance this view with different theories and models we found to be relevant to this issue. First, we want to see why companies want to integrate their information systems.

3.2 Reasons for information systems integration in M&A

The idea or dream of an enterprise wide homogenous Information System is becoming more and more obsolete as corporate M&As are leveling on a stable level and one cannot talk about a wave of M&As anymore. Therefore the term of Information System Infrastructure is being used more frequently and this seems to reflect the future direction for information systems as the integration of information systems in acquired companies becomes if not a regular at least not an unusual activity.

According to Weber & Pliskin (1996) post-merger investments in transactional IS in order to cut costs and investments in strategic IT aimed at gaining a competitive advantage is lowering both fixed and variable costs of the merged firm. Especially IS integration investments in inventory control, order processing and other data processing as financial systems increase synergy by lowering costs. Thus, M&A with a higher level of integration of IS might be expected to exploit more of the synergetic potential than M&A that do not integrate the IS or integrate them to a lesser extent. Weber & Pliskin (1996) link the value of integrating IS during M&A to merger performance in their findings of their study conducted in the banking industry and other IS intense industries. The result is consistent with that of other studies, which found that IT investment aimed at cutting costs and exploiting economies of scale can be associated with improved performance, with the only difference that Weber & Pliskin's (1996) study has been focusing on IS intense companies.

Information systems are being integrated as needs for integration arise due to a variety of reasons in M&A. Sandoe et al. (2001) explain different *motivations* for information system integration that can emerge within an organization:

Information sharing; Sandoe et al. (2001) states that lack of information system integration can involve difficulties in sharing information between different functions in an organization. In these cases information is often transferred manually through copies of paper which can lead to errors, redundant information and limited possibilities to conduct thorough analysis (Sandoe et al., 2001).

Information quality; Another problem is that the information is not of sufficient quality and that the visibility of the information is poor. The correct information is not displayed at the correct time which can involve problems when the information is to be used. Error information can lead to numerous problems if the result of information process displays incorrect results (Sandoe et al., 2001).

Processes; Many organizations have internal processes that are complex and ineffective (Sandoe et al., 2001). Information system integration can be a way to make these processes more effective and thus enhance the possibilities for the organization to run its business. Disorder in the processes of the business can lead to delay and involve ineffectiveness which in long term may lead to deteriorated financial results (Sandoe et al., 2001).

Information availability; Integration of an organization's information systems leads to enhanced accessibility of the information (Sandoe et al., 2001). Information that is accessible through out the whole organization gives the management possibilities to make correct decision with the information as a base (Sandoe et al., 2001).

Productivity; The enhancements in productivity that an organization will gain out of integrating their information systems are often much higher than expected and is considered the largest benefit (Sandoe et al., 2001). Productivity enhancement involves timeline decrement, especially timelines related to ordering and financial processes (Sandoe et al., 2001).

Competitive advantage; Information system integration is a way to reduce system development cost and this creates a competitive advantage for organizations who share application information either within the organization or between organizations (Linthicum, 2000). An organization's information system is a tool for increasing competitive advantage, customer satisfaction, and to support strategic initiatives (Sandoe et al., 2001).

Reduced cost; Many organizations want to control cost related to storing, production and personnel within almost every part of the organization and consider information system integration as a way to reduce cost (Sandoe et al., 2001). Cost reduction is mostly becomes apparent in storage and personnel costs after information systems integration. Information technology cost is also reduced but to a significantly less amount than initially expected (Sandoe et al., 2001). Linthicum (2000) argues that information systems integration is driven by numerous factors however the main factor is always the financial aspect.

3.3 Theories relevant to proactive IS integration

In this section we introduce concepts, theories and models connected to the proactive IS integration we found to be relevant to understand the entire scope of the problem area. All of these issues play an important role for the proactive use of IS integration and without them the issue would not be covered adequately or provide a complete picture.

3.3.1 Henningsson's (2006) framework

We discovered in our literature review that there is no model or framework covering this field of IS integration in M&A from an overall perspective, though there are models describing parts or single aspects of the phenomenon. As also the term of 'proactive' has not been described satisfactory in literature, up-to-date we collected relevant literature in order to enhance the picture of what 'proactive' means. The term 'proactive' is not self-explanatory and therefore we focused on properties and relations to other aspects of IS integration in order to get a deeper understanding of the term. We found that a point of entry into the discussion is not easily found but we identified Henningsson's (2006) tentative framework as one possible attempt to cover the different aspect we are interested in as well as taking the overall perspective into account which we found to be important for the definition of 'proactive'.

We introduce the tentative framework by Henningsson (2006) as point of entry into the subject, as the framework is one possible attempt to cover and integrate the three fields of M&A, IS integration and IS Integration in M&A.

As there is a need to comprehend this combination of fields and its intersection, Henningsson (2006) proposes a tentative framework as a basis for further research and to provide a frame of reference for comparative studies in order to increase the amount empirically founded studies. Henningsson (2006) integrated six dimensions in his framework, namely: A: *Synergetic potential*, B: *Organizational integration*, C: *Intentions and reactions*, D: *IS type*, E: *Integration architecture*, F: *IS integration role*. All of these dimensions are based on research and models by other researchers and will be described in the next section.

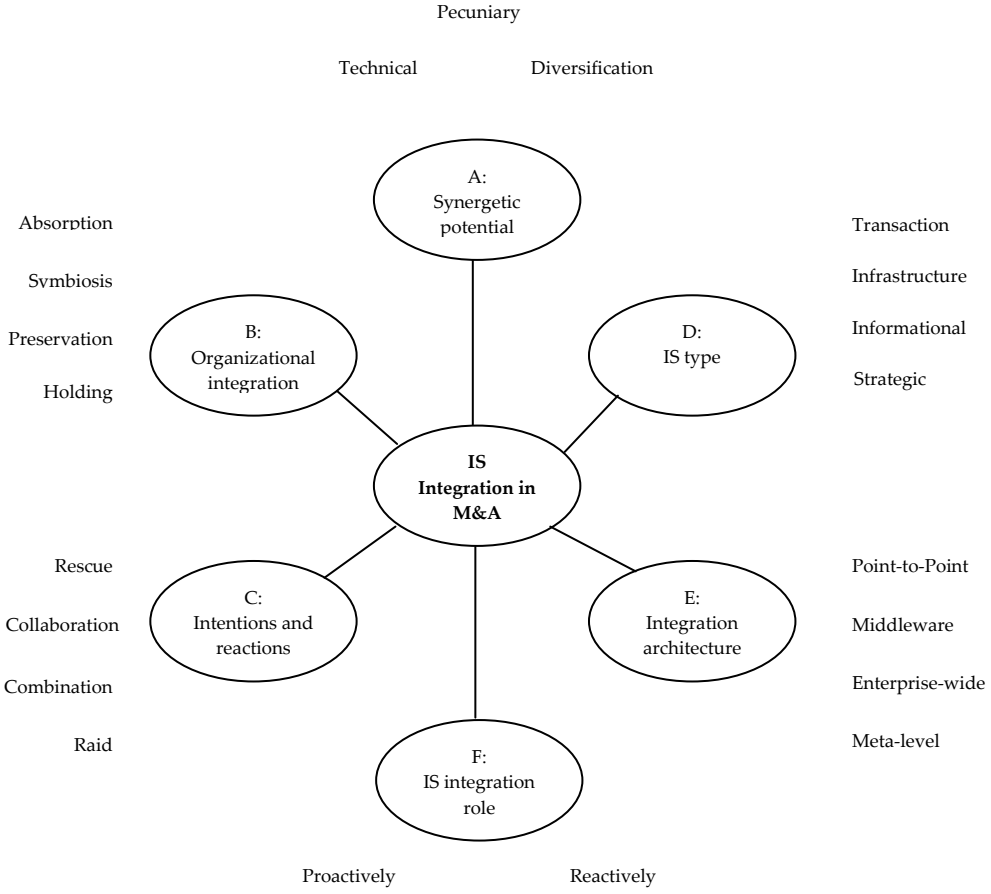

Figure 3.1: A tentative framework by Henningsson (2006).

Each of these dimensions describe one aspect of IS integration in M&A and the whole framework provides a richer picture than one dimension alone, pointing out dynamics and different relationships between the dimensions. Several relationships have already been identified by the author, but he points out that this is only a good starting point (Henningsson, 2006).

Dimension A: Synergetic potential; synergy is important to understand as it is the most mentioned reason for mergers and acquisitions. There are three different types of synergies, technical economies, pecuniary economies and diversification economies.

Dimension B: Organizational integration; this dimension deals with integration as some form of integration is necessary to raise synergies. The degree of integration is described by Haspeslagh's and Jemison's (1991) model, holding, preservation, symbiosis and absorption along the two dimensions, strategic interdependence and organizational autonomy.

Dimension C: Intentions and reactions; this dimension deals with the problem whether or to what degree both parties want the M&A deal (Buono & Bowditch, 1989). The most hostile variant would be hostile, or raid on the one end and the friendliest takeover would be organizational rescue with a continuum between the end poles. On this continuum there is also Collaboration and contested combination describing different degrees of agreement to the M&A deal.

Dimension D: Information system type; as IS infrastructure is a complex issue, it needs to be considered in order to understand the complete picture of a M&A deal. Technology is permanently changing and in order to analyze this area it is more suitable to describe the function of the technology rather than the technology itself. Weill and Broadbent (1998) divides IS into Infrastructure, Transaction, Informational and strategic IS.

Dimension E: Integration architecture; there are different ways to achieve IS integration and therefore this issue needs consideration. Markus (2000) found four different approaches, namely: Point-to-point, Middleware, Enterprise-wide, and Meta-level.

Dimension F: IS integration role; this dimension deals with how IS integration was considered to the M&A deal. McKiernan and Merali (1995) found a distinction between a proactive and a reactive role of IS integration in M&A.

This dimension, *IS integration role* (dimension F) the tentative framework proposes, can have two different states, reactively or proactively. This is the point of entry for our study. The framework states relationships exist between this dimension and the other dimensions and it is those relationships we are interested in, especially between *IS Integration Role* and the *Synergetic Potential*.

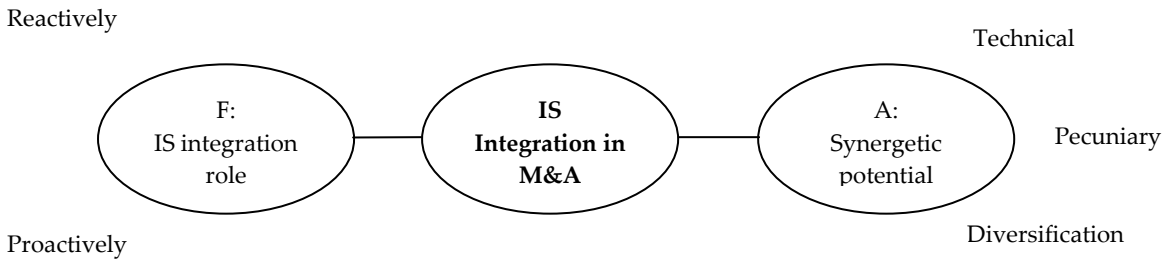

Figure 3.2: Point of entry for this thesis.

Henningsson's (2006) tentative framework proposes that there are other factors influencing this relation between IS integration and Synergetic potential (see Figure 3.2), namely the other dimensions of the framework. There seems to be unanimity in literature that many factors influence the synergetic potential of M&A deals. This fact suggests that one should not ignore other factors when analyzing the relationship between IS integration role and the synergetic potential. This is the goal, of out of the theoretical chapter enhance the concept of proactivity, by explaining what factors can influence whether IS integration becomes proactive or reactive, and whether these other factors have an influence on the synergetic potential of proactive IS integration. Due to our literature review we are able to present aspects we found having an influence on the relation between IS integration role and the synergetic potential.

As synergy is one of the central themes in M&A deals, we continue the next section by explaining the concept of synergy.

3.3.2 Synergy

Lubatkin (1983) argues that the reasons for M&A basically all are that of potential synergies. He defines synergy as what "[…] occurs when two operating units can be run more efficiently and/or more effectively together than apart" (Lubatkin, 1983). He identifies three different types of synergies, namely: *Technical economies*, *pecuniary economies* and *diversification economies*.

Technical economies are mostly what Kumar et al (2002) describe, and according to Lubatkin (1983) technical economies include economies related to reduction in cost, marketing-, production-, scheduling-, banking- and compensation economies. Most of the technical economies are scale economies which are reached when physical processes are changed so that the same amounts of inputs, or factors of production, produce a higher quantity of outputs and thus lower the costs (Lubatkin, 1983).

Pecuniary economies represent the ability to dictate prices by using market power achieved through size both on the buying side and selling side (Lubatkin, 1983).

Diversification economies are achieved by improving a firm's performance relative to its risk attributes or by lowering its risk attributes relative to its performance. For stockholders most of the risk-reduction benefits are available at lower transaction costs. The first benefit comes from the lender's willingness to lend more and at better terms to a combined firm than it would to the two firms

operating separately. The second source of benefits is related to the decreased importance of bankruptcy costs as the probability of default on debt payments is reduced (Lubatkin, 1983).

Synergy is what is wanted in the end of an M&A deal, and as we have defined this in the section above, we want to move on to the beginning of an M&A deal and then continue in a logical order through different aspects of M&A deals. The starting point of every M&A deal is defined by what kind of relationship the two units had *before* the deal. Therefore we want to take a closer look on the pre-merger relationship and whether this is relevant to understand the concept of proactivity in IS integration in M&A deals.

3.3.3 Pre-merger relationships in M&A

Walter (1986) mentions four different types of acquisitions namely: *horizontal, vertical, concentric,* and *conglomeratic* acquisitions. The degree of similarity or non-similarity between the business activities in the acquiring company and the company being acquired decides the type of acquisition.

Horizontal acquisitions involve acquiring another organization with similar product offers on the same or different market, i.e. the companies in question are direct competitors before the acquisition. A close organizational integration of both involved companies is a determining factor for the success of this type of acquisition and the probability of an acquisition of this type becoming financially successful increases if the involved organizations are similar to each other concerning market and products. This is due to the fact that the companies involved can exchange information and expertise within their business area and use the economies of scale such as enhanced production that will emerge out of the acquisition (Walter, 1986).

Walter (1986) further argues that the motivation for companies to conduct a horizontal acquisition could be a will to consolidate production and lower costs or create a bigger market and thus become stronger all together. Horizontal acquisitions involve high degree of organizational overlapping which makes this type of acquisition somewhat difficult and problematic to conduct (Walter, 1986).

Vertical acquisitions involve acquisitions where there pre-exist a buyer-seller relationship between the companies that the acquiring company want to integrate in to its current organization, e.g. an acquirement of a supplier. Vertical acquisitions could thus be seen as an acquisition involving organizations within the same branch of business but from different part of the value chain. For example a company could acquire both backwards towards suppliers and forward towards distributors. The motivation for a vertical acquisition could accord Walter (1986) be that an acquiring company wants to decrease its dependency towards suppliers or reduce vulnerability and costs for its business.

Concentric mergers and acquisitions means that the companies involved are very similar concerning production and distribution technology. Concentric acquisitions also mean that the company to be acquired is within a similar but to the acquiring company unknown are of business, e.g. a company selling children's cloths can choose to expand its business by selling other types of cloths as well. Concentric acquisitions are similar to horizontal acquisitions. The difference lies in the fact that concentric acquisitions do not involve integration of the companies' physical parts, instead aspects like common trademarks and company symbols are integrated (Walter, 1986).

Conglomeratic acquisitions involve companies which do not have similar products, distribution technology, or production technology. Also there exists no buyer-seller relationship between the

involved parties. Initially the personnel at the company being acquired is affected to a very low degree in this type of acquisitions since they are the only ones that posses expertise within the actual business area. Changes will appear when the acquiring company has got to know the new organization and decided how it is best integrated into the main organization. The fact that the involved organizations do not have any relation to each other makes it very difficult to identify potential synergies (Walter, 1986). Externally the organization will not change noticeably and internally the focus will mostly be on financial reporting. This means that more focus will be on financial reporting than on marketing and human resource activities.

We found the pre-merger relationship important to the IS integration as it determines the possible re-usage of knowledge on processes which have to be integrated. If the products and therefore the processes are unrelated, the character of the integration becomes one of learning-by-doing rather than being based on prior experience and thus it makes IS integration a more complex matter than in the case where processes are related. As this has an influence on IS integration we argue this is a relevant aspect to understand the concept of proactive IS integration.

In our review of literature in this field we found one aspect dealing with the intentions and reactions of the two parties in the deal which is the next logical step to understand the problem of IS integration in M&A deals.

3.3.4 Degree of friendliness and hostility in M&A

Pritchett (1997) suggests a classification of mergers and acquisitions based on how the acquisition was made as follows: *Organizational rescue, Collaboration, Contested combination* and *Raid*. Pritchett (1997) describes these different forms of acquisitions going from the friendliest acquisitions (Organizational rescues) to the most hostile acquisitions (Raids). This classification thus indicates a scale between collaboration and increased degree of conflict.

Organizational rescue is the form of acquisition that is the friendliest and is often well perceived by the organization that is about to be acquired. There are two basic types of acquisitions included in organizational rescue namely: financial salvage and rescue from a hostile take over (Buono and Bowditch, 1989). When an acquired company is not doing very well financially it results in a financial salvage bringing on changes like for example that many managers are replaced, organizational restructure and personnel insecurity.

Collaboration is the next friendliest form of acquisition and can be seen more as a merger than an acquisition. The intention here by both the organizations is to reach deal that both organizations profit from. A problem connected to collaboration mergers is often the way which information concerning the merge is spread to the employees also there is an inability to follow up on hasty promises (Buono and Bowditch, 1989).

Contested combination is the next form of acquisition. The situation here involves a higher degree of conflict. In contested combinations only one of the organizations involved want the deal or the organizations do not agree on the same agreements concerning the acquisition (Buono and Bowditch, 1989). Problems connected to contested combinations involve a high level of hostility, interaction between the organizations involve conflicts, and obvious resistance during integration stage (Buono and Bowditch, 1989).

Raids are the most hostile kind of acquisitions where a company acquires another company by ignoring management and directly asking shareholders to sell their shares (Buono & Bowditch 1989). A high level of personnel resistance and employee insecurity are problems connected to raids (Buono and Bowditch, 1989).

The degree of friendliness controls the willingness to cooperation in the target organization. This has an influence on the barrier to access necessary information on processes in the target organization which can inhibit the successful organizational and also IS integration, as IS integration is not possible without access to information on processes. Thus, if the access to information is hindered, IS integration is affected.

The next step is to take a look at what happens to the two units after the deal is closed and the organizational integration takes place. We found two concepts relevant to this matter, organizational autonomy and strategic interdependence, which we describe and discuss in relation to IS integration the next section.

3.3.5 Organizational autonomy and strategic interdependence in M&A

Both the environmental context and the strategic requirements will dictate the degree of integration between merging organizations which is necessary to raise the desired synergy effects. Haspeslagh and Jemison (1991) detected four categories of M&A along two dimensions to describe this fact. The dimensions are called *strategic interdependence* and *organizational autonomy* and they determine the type of M&A and integration approach. The four types of M&A are called *holding, preservation, symbiosis and absorption* (see figure 3.3).

The two categories, holding and preservation show a low level of strategic linkage. In fact, holding constitutes an approach where the target unit is left undisturbed and has total independence, whereas preservation represents a partial integration of the target unit, management at arms length with autonomous operations. In absorption and symbiotic acquisitions, strategic interdependence is high and they exhibit a greater difficulty of post acquisition integration. The symbiotic approach is where both units have interdependence and are transformed to fit each other. In absorption on the other hand, the target unit is completely incorporated by the acquiring unit and maximum operational consolidation is achieved (McKiernan & Merali, 1995).

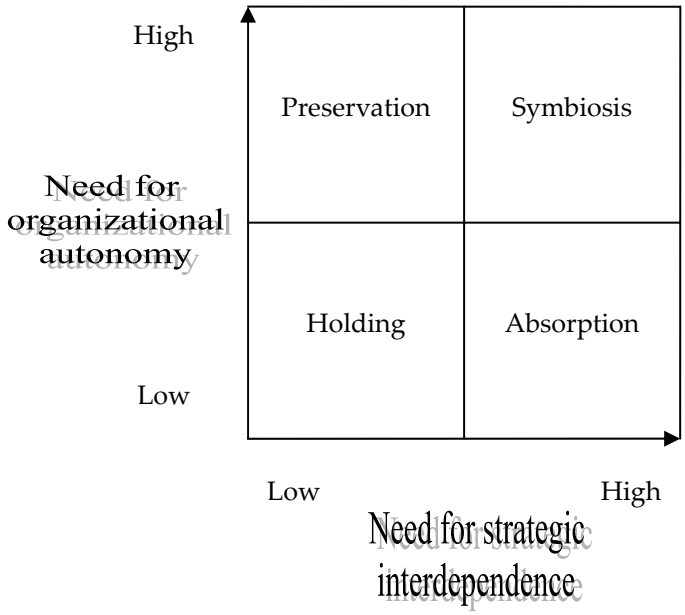

Figure 3.3: Acquisition Types. (Haspeslagh & Jemison, 1991, p.145).

According to McKiernan & Merali (1995) IS integration is affected by organizational autonomy and strategic interdependence. As the level of strategic linkage is low in Preservation and Holding, there is no immediate need to change the IS infrastructure. In the case of absorption the need for interdependence is high in order to create the expected values, like synergies for example. Therefore full organizational consolidation is necessary and hence the consolidation of the two IS architectures is of great importance. In Symbiotic acquisitions usually there is both high autonomy and interdependence between the two organizations and thus is a complex challenge for IS integration, and requires centralized solutions and/or software bridges where it is not possible to change the existing systems.

The organizational autonomy and strategic interdependence are affecting the scale and scope of the needed IS integration as they determine the necessary flow and visibility of information. Depending on the existing IS in the two units the adequate integration solution has to be chosen and the role of the IS can either be reactive or proactive. In order to understand the scale and scope of the necessary IS integration dependent on organizational autonomy and strategic interdependence we need to take a look at different possible degrees of IS integration, which we present in the next section.

3.3.6 Information systems layers

In order to understand what IS integration is, it is necessary to understand that there are different layers in information systems which can be needed to be integrated. The degree of integration is dependent on which levels are integrated and to what extent they are integrated. This leads to different concepts of integrating the information systems, explained later on in the chapter.

Weill and Broadbent (1998) argue that a classification of information systems based on functionality rather than technology is more appropriate when it is not the technology it self but rather its possibility to enhance organizational business which needs to be taken in account. Weill and Broadbent (1998) classify IS into *Infrastructure, Transaction, Informational,* and *Strategic IS*.

When it comes to *Infrastructural* IS this refers to basic technology that consist the information road network, that is servers, cables and software that permits information flow. An infrastructural IS have characteristics such as: communication network service that is firm wide, able to manage large scale computing, able to manage shared customer databases, and an intranet that is firm wide (Weill and Broadbent, 1998).

Transaction IS involves sales systems, monitoring of stocks, production planning, processing orders and bookkeeping software and here *Transaction* refers to business transactions. In order for transactional IS to serve its purpose reliable, an infrastructural IS is required. Thus transactional IS integration is connected to infrastructural IS integration. Transactional IS brings with it reduced cost by increasing transaction speed, and reliability or use of resources (Weill and Broadbent, 1998).

Informational IS can be seen as decision support systems providing executives and managers with figures and information concerning sales or customer satisfaction and is working on the basis of transactional IS (Weill and Broadbent, 1998). In order to establish informational IS integration of transactional IS is preferred. However informational IS not dependent on transactional IS as with the dependency between infrastructural and transactional IS.

Information systems that have a direct impact on the competitive ability of an organization such as providing competitive advantage rather than being a necessity from a strategic point of view is considered as *Strategic* IS (Weill and Broadbent, 1998). When it comes to strategic IS the technology itself does not have a vital role but rather how the IS is implemented and used in creating competitive advantage.

Information system layers are suitable to describe the extent of integration, as each layer is describing one functionality which is implemented, and each of these layers can be integrated to a different extent when integrated. Therefore there are different IS integration solutions possible and this is what the next section is describing.

3.3.7 IS integration architecture

For enterprises it is a necessity to have integrated systems to serve their customers effectively and in M&A it is often necessary to integrate IS to achieve business integration. For example a company without integrated systems which wants to perform a certain calculation might have to extract data from two systems and load the data into a third system for calculation in order to get the wanted information, and this is even unavoidable for simple calculations like comparing two figures (Markus, 2000).

To prevent this kind of work IS integration is unavoidable but there are different degrees of integration, using different techniques or systems, *namely Interfaces, Middle Ware, Data Warehouses, ERP-systems* (see figure 3.4) (Markus, 2000).

The ideal would be an enterprise wide system, called *ERP system* (enterprise resource planning). This would be the end pole of integration. ERP systems are integrated software packages by vendors like SAP or Oracle containing different applications for the various departments of a company using only one single database. Therefore all the data is up-to-date and shared, so for example if an order is entered into the system all the concerned departments and systems are automatically updated.

The simplest form of integration on the other hand would be a bridge or *interface* between two applications that allows the transfer of data. This is a convenient method if there are only two systems but the number of interfaces increases exponentially to the number of applications. For a company this can become expensive and time-consuming considering maintenance.

The next kind of approach is trying to tackle this problem, *middle ware*. This is an intermediate layer between applications, acting like an interface. This kind of solution would for example allow replacing an application without changing the database. Maintenance is also simplified as there is only one interface to maintain and update.

A *Data Warehousing* solution is not changing anything in the old systems. Instead data is extracted from the old systems and stored in a separate database, which is called the 'warehouse'. Usually this kind of systems allows for very complex analysis but they do not necessarily solve the problem of one application not being able to access another application's data.

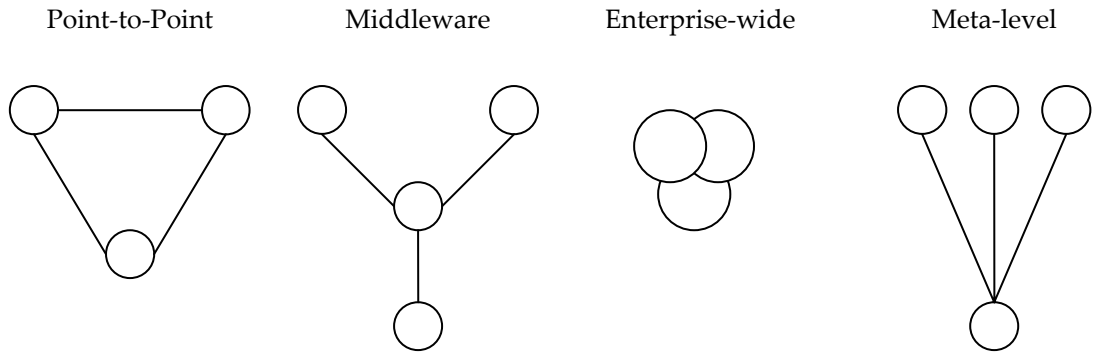

Figure 3.4: Four ways to integrate. (Markus, 2000).

All of these approaches have different advantages and disadvantages and can be summarized in a table (Markus, 2000):

Strategy	Advantages	Disadvantages
Data Warehousing	▪ Data integration without changes in source systems or business processes ▪ Possibility to combine internal and external data ▪ Integrated environment for reporting, data analysis and data mining ▪ Can sometimes be justified and implemented as a technology-driven IT infrastructure project	▪ Cannot compensate for poorly designed data structures in source systems ▪ Usually involves data aggregation ▪ Does not support process integration ▪ Data name standardization and data cleaning can require extensive effort and business involvement ▪ Business involvement and significant training required to benefit from data mining
ERP System	▪ Excellent internal data and process integration when all legacy systems are replaced ▪ Can produce significant business process improvements through adoption of built-in best practices	▪ Often requires extensive organizational change and hence business involvement in justification and implementation ▪ Certain industry- and firm-specific business processes are not supported by ERP systems; some legacy systems are usually retained ▪ Does not provide integrated reporting and analysis environment for internal and external data
Enterprise Applications Integration (EAI) / Middleware	▪ Achieves internal data integration and can support process integration without replacement of legacy systems ▪ Supports use of "best-of-breed" applications from multiple vendors ▪ Can sometimes be justified and implemented as a technology-driven IT infrastructure project	▪ Requires modification of source systems ▪ May work better with unmodified industry standard source systems ▪ Process integration requires organizational change and business involvement ▪ Immature technology: - Vendor proliferation - Support for n-way integration is still experimental ▪ Proprietary technology - Inability to combine different EAI solutions, for example after mergers

Table 3.1: Advantages and Disadvantages of different integration approaches (Markus, 2000).

3.3.8 An enhanced view on proactive IS integration

The section in the beginning of this chapter explains what *proactive* IS integration is according to existing theory, though what influences this outcome of IS integration to be *reactive* or *proactive* is not defined in the literature. Our literature review led us to theories which we found to be relevant as influencing factors on IS integration which qualifies as *proactive*.

The *pre-merger relationship* is important to the role of IS integration as it determines the possible re-usage of knowledge on processes which have to be integrated. If the products and therefore the processes are unrelated, the knowledge on the products and processes can only be found in the target company. As IS integration is seen as a possible solution for problems connected to organizations' internal processes with the aim of streamlining processes in order to make the organization as whole more efficient (Sandoe, 2001), the pre-merger relationship is one factor influencing the acquiring company's *proactive* IS integration. If the knowledge is located only in the target company, the acquiring company is dependent on the target company and a need to transfer this knowledge arises in order to streamline the processes and integrate them in the acquiring company's IS. This can hinder the IS integration to such an extent that the outcome cannot be called proactive anymore.

The *degree of friendliness* controls the willingness to cooperate in the target organization (Buono and Bowditch, 1989). This has an influence on the barrier to access necessary information on processes in the target organization which can inhibit the transfer of knowledge and therefore inhibits a successful IS integration.

Organizational autonomy and strategic interdependence have an influence on the extent of the IS of the target company has to be integrated in order to reach the expected synergies according to McKiernan & Merali (1995). The level of strategic linkage is low in Preservation and Holding, and therefore there is no immediate need to change the IS infrastructure. In the case of absorption the need for interdependence is high in order to create the expected values. Therefore full operational and cultural consolidation is necessary and hence the integration of the two IS architectures is of great importance. In Symbiotic acquisitions usually there is both high autonomy and interdependence between the two organizations and thus is a complex challenge for IS integration (McKiernan & Merali, 1995).

It is necessary to understand that there are different *layers* in information systems which need to be integrated. The degree of IS integration is dependent on which levels need to be integrated and to what extent they have to be integrated. The requirements on which layers need to be integrated are depending on organizational autonomy and strategic interdependence, as the greater the interdependence and the lower the autonomy is the more information needs to flow which requires a higher degree of integration (Markus, 2000).

This leads to different *architectures* of integrating the information systems as the more IS layers need to be integrated the higher the requirements on the IS architecture become. In the case of only infrastructural integration being required, a hardware connection and a software bridge might be enough to achieve the goal. For example this might be the sufficient in the case of two companies with high autonomy only needing to connect their email systems, as email is a function of the IS infrastructure (Weill and Broadbent, 1998). If more IS layers are to be integrated the requirements on the architecture increase, which in the extreme case requires an ERP solution to be implemented (Markus, 2000).

3.4 Key concepts influencing proactive IS integration

As the covered fields of theory in this chapter are extensive and the focus of this study is the intersection between M&A and IS integration research, the theoretical foundation of this thesis becomes multi-facetted and may seem hard to grasp at first sight. But each part of the frame of reference can be seen as a component of the overall issue of IS integration in M&A and this becomes visible in Henningsson's (2006) tentative framework presented earlier. This intersection between these theoretical fields is where there is a need for further research as much of the field's foundation is not empirically manifested. Here we will present a list of key concepts related to proactive IS integration deduced from the theory which is compiled into a model and used to analyze our empirical material.

Factors influencing proactive IS integration:

- *Pre-merger relationship:* What relation existed between the two companies before the acquisition?
- *Degree of friendliness*: Did the target unit cooperate in order to provide the necessary understanding of the firm and its processes?
- *Organizational autonomy and strategic interdependence*: How are the units interconnected after the acquisition?
- *Information system layers*: What layers of the target company's information system need to be integrated?
- *IS integration architecture*: What IS integration architecture needs to be implemented in regard to the IS layers that need to be integrated?
- *Synergy*: In regard to previous factors, what synergies were gained, or how are synergy effects affected by the IS integration?

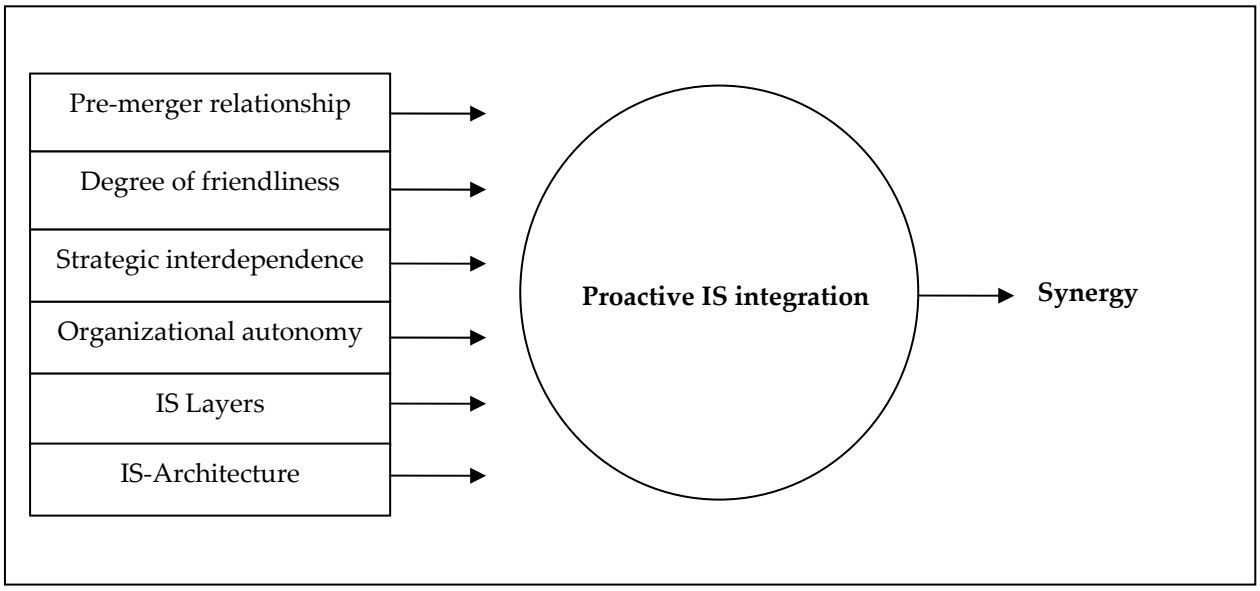

Figure 3.5: Factors influencing proactive IS integration in M&A.

3.5 Mapping the key concepts to an interview guide

As the above presented model is used to analyze the empirical findings of this study the interview guide has been divided into topics corresponding to the theoretically deduced factors influencing proactive IS integration. Not only the outcome is relevant but also *how* the outcome was achieved. Each topic constitutes of questions related to the specific factors such as:

- *Pre-merger relationship:* In order to know what pre-merger relationship existed between Trelleborg Industrial Hose and Dynaflex before the acquisition we found it relevant to include following questions: *What relation existed between Trelleborg Industrial Hose and Dynaflex before the acquisition? What was the integration objective?* Etc.

- *Degree of friendliness*: To gain information about whether the acquisition was of friendly or hostile nature we included questions as: *How would you characterize the acquisition? Did the target unit cooperate in order to provide the necessary understanding of the firm and its processes?, What was the financial situation before the acquisition at the target company?, How was the takeover perceived?* Etc.

- *Organizational autonomy and strategic interdependence*: This factor involves how the organizations are interconnected after the acquisition thus following questions was included: *How are the units interconnected after the acquisition? What was the desired level of integration?* Etc.

- *Information system layers*: To know what different IS layers existed at Dynaflex before the acquisition questions such as: *What IS layers existed at Dynaflex before the acquisition? What layers of the target company's information system had to be integrated? What layers where integrated?* Etc. was included.

- *IS integration architecture*: Concerning the implemented IS integration architecture included following questions: *What IS integration architecture was implemented in order to integrate the target company's IS?* Etc.

- *Synergy*: Concerning the leverage of synergies questions such as: What kind of synergies where expected when acquiring the target company and which have been gained? Which synergies are products of the IS integration? Etc. was included.

In order to view the full set of questions under each topic please view the interview guide (Appendix).

4 Findings

In this chapter we provide descriptions of the empirical findings of our study from various sources such as interviews, the World Wide Web, and documentation made available to us. First we give a description the case study object, the company Trelleborg and then we move on to report the information we gained through the interviews conducted concerning the acquisition of Dynaflex. The analysis, discussion and conclusion drawing of this information will be accomplished in the next chapters and therefore this chapter should be considered solely as a neutral account of the empirical findings.

4.1 Case study object

The case company Trelleborg is a concern mainly doing business with rubber products in various industries such as automotive components and systems, industrial rubber products, infrastructure construction and offshore oil and gas products. This is just an excerpt out of their fields of products and solutions but a detailed description would be too extensive and not relevant for this study. The Trelleborg group is divided into five business areas and each business area is further divided. The business area we are looking at is called Trelleborg Engineered Systems and this area is divided further into more than twenty units (see figure 4.2).

4.1.1 The Trelleborg group

> "*Trelleborg is a global industrial group whose leading positions are based on advanced polymer technology and in-depth applications know-how. We develop high-performance solutions that damp, seal and protect in demanding industrial environments.*" - (www.Trelleborg.com, 2006)

The Trelleborg group is organized into five business areas, *Trelleborg Automotive, Trelleborg Wheel Systems, Trelleborg Engineered Systems, Trelleborg Building Systems, and Trelleborg Sealing Solutions*. The group has about 22,000 employees in 40 countries, with its head office located in Trelleborg, Sweden. The group has approximately 24 billion SEK (2.5 billion euros) of annual sales. Trelleborg AB was founded in 1905 (www.Trelleborg.com, 2006).

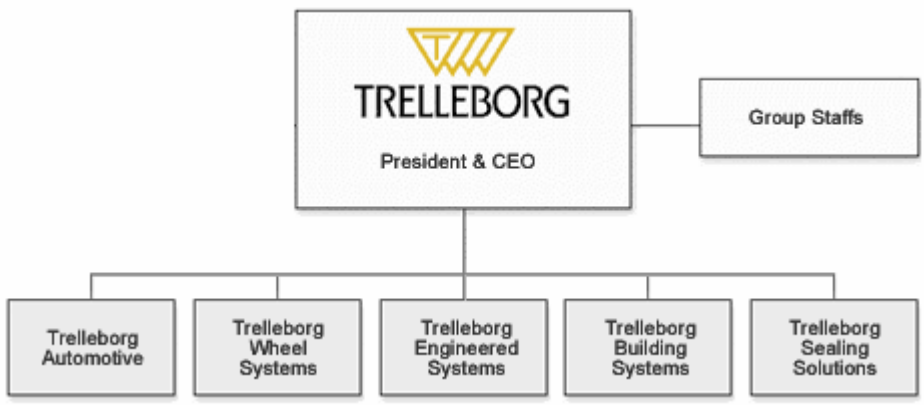

Figure 4.1: The Trelleborg Group (www.Trelleborg.com, 2006).

The Trelleborg groups states as their targets besides, leading positions in attractive segments and markets, operational excellence, target oriented leadership also, organic growth and value generating acquisitions. The group is aiming at creating stable and continuous organic growth with a higher growth rate than its underlying markets. Their outspoken goal is to have an aggressive overall growth rate and in order to achieve this rate, the group seeks acquisition candidates in a systematic fashion from identification and evaluation of acquisition candidates to their acquisition and integration. The contribution of these acquisitions is to create added value by new advanced engineering and technologies, support the build-up of critical mass in attractive markets necessary to reach leading positions and offer a solid base for organic growth or to provide opportunities for consolidation (www.Trelleborg.com, 2006).

4.1.2 Trelleborg Engineered Systems and Trelleborg Industrial Hose

Trelleborg Industrial Hose, which is one of about twenty subunits of Trelleborg Engineered Systems (see figure 4.2), is the organization who made the acquisition of Dynaflex. Trelleborg Engineered Systems is a leading global supplier of industrial fluid systems and engineered solutions that focus on the protection and safety of investments, processes and individuals in demanding environments. In 2005 the average number of employees was 3,261 and the net sales was of 4,5 billion SEK. The head office is located in Trelleborg, Sweden. Production units are located in Australia, Canada, Estonia, France, Germany, Lithuania, the Netherlands, Norway, Singapore, Spain, Sweden, the UK and the US.

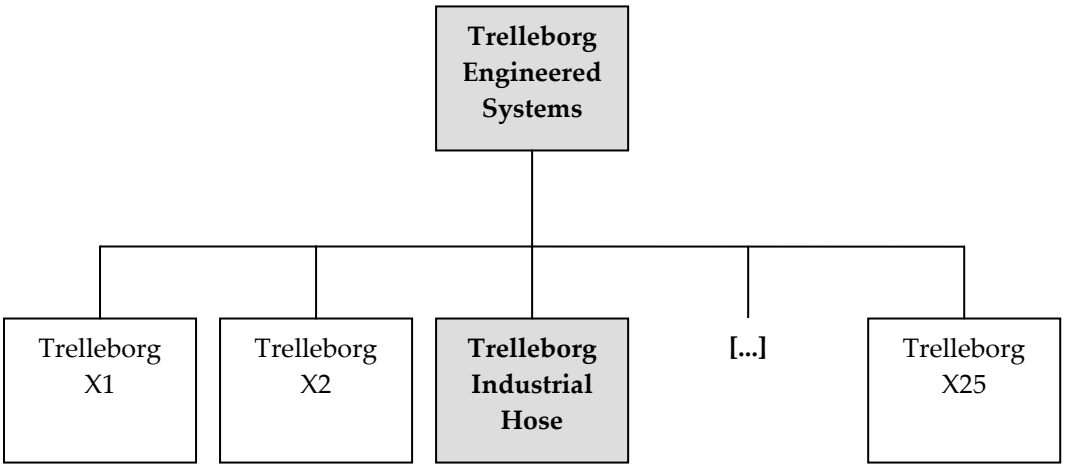

Figure 4.2: Relation between Trelleborg Engineered Systems and Trelleborg Industrial Hose

4.1.3 Manuli Dynaflex

Through the Trelleborg Engineered Systems business area, the Trelleborg Group has acquired the Dynaflex Division in 2004, a small unit with about twenty employees for the manufacture of composite hoses in Sancheville, France, from the industrial rubber group Manuli. Dynaflex produces hoses in composite materials. Typical applications are tanker-truck hoses, aviation-fuel hoses and hoses for aggressive chemicals.

4.2 Empirics

The empirical findings of the interviews will be presented according to the key concepts we compiled in the end of our theoretical chapter (see chapter 3.4). We think the structure is beneficial to the understanding of the matter and also represents our way of thinking and therefore follows the logic of argumentation in the later chapters analysis, discussion and conclusions.

4.2.1 Pre-merger relationship

Since Trelleborg Industrial Hose is a huge actor and a specialist in the rubber business they posses knowledge about most buyers and suppliers, and the former owner of Dynaflex was one of Trelleborg Industrial Hose's own customer/distributor which is how Trelleborg got to know about Dynaflex. Dynaflex was owned by another company (Manuli) but Dynaflex was not a core business unit for them. They were driving the business but Trelleborg saw the possibility to develop the business further which drew them towards the acquisition. Finally, Dynaflex was acquired in March 2004. Trelleborg had just acquired another company called Unifluid which was active in the same product area and was founded by former Dynaflex people, meaning people from Dynaflex had left and founded Unifluid in the same town.

Before the acquisition of Unifluid, Trelleborg did not have any products competing with Dynaflex's products. Trelleborg was buying composite assembly hoses for uses like in gas stations for example from Dynaflex. Dynaflex was purchasing hoses in order to produce these composite assembly hoses from another producer. The sales department saw that Dynaflex had a niche, focusing on oil and petro-chemical products which were of interest for Trelleborg. Because of the acquisition of Unifluid, Trelleborg had products in this field of composite hoses and the decision evolved that Dynaflex would be a good acquisition since the two businesses were suitable for consolidation as they were in the same business area and employees already knew each other since earlier. At that time the decision was pure business oriented and no consideration concerning the IT was taken. The decision was eventually made by the management group of Trelleborg Industrial Hose to acquire Dynaflex and consolidate Dynaflex and Unifluid as they had been working together before. Also, Trelleborg gained the rights to use certain brand names for a limited period of time.

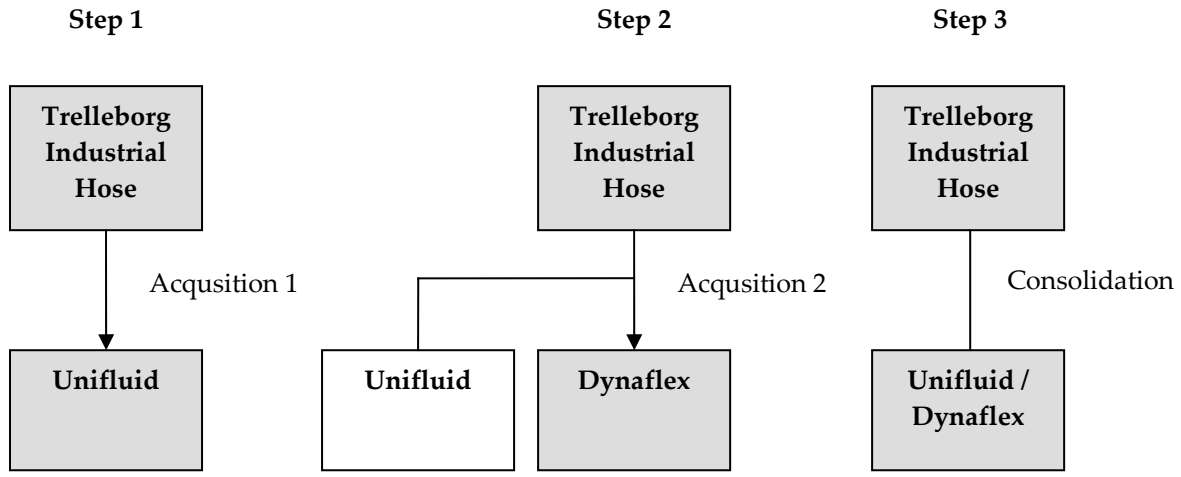

Figure 4.3: Relation between Trelleborg Industrial Hose, Unifluid and Dynaflex.

The IS integration was a general management issue as it was part of the deal that the Dynaflex unit would be allowed to use Manulli's ERP system J.D. Edwards for seven months after the acquisition. This was not a choice but a necessity as the system had to be replaced because it belonged to and was connected to another company.

4.2.2 Degree of friendliness

The Dynaflex acquisition was managed by Trelleborg Industrial Hose's sales department and the main person in charge was the sales director. According to the interviews conducted, Dynaflex did not need this deal out financial reasons but wanted the deal out of organizational reasons mainly. The deal was wanted by both sides and both sides could see advantages in working together under one roof. The takeover was perceived as positive and there were no other plans to associate with other companies in case the deal with Trelleborg would not be successful accomplished. In the interviews it became clear that, "the company was not for sale" which further strengthens the argument that the decision evolved mutually and was wanted by both sides. Trelleborg were quick to secure important key persons at Dynaflex, some people did not want to join Trelleborg and they left the company. After the consolidation with Unifluid some positions in the new company were double staffed which meant that some persons had to leave the company, but the persons leaving did not do this out reasons such

as bad personal atmosphere or cultural clashes. These persons were engaged at management level. During and after the organizational integration there were no developments leading to conflicts inside the unit or between the unit and the Trelleborg group. There occurred a transfer of personnel from Trelleborg to the newly acquired unit in the case of the general manager / chief executive officer and also head of production which were installed by Trelleborg with internal personnel. There was nobody transferred from Dynaflex to the Trelleborg group. Employees feel part of their new company, the Trelleborg group, as they were precociously informed about the situation and its effects. They were included organizationally at an early stage in the integration and were fully granted information regarding their concerns which helped to be comfortable with the new situation.

4.2.3 Organizational autonomy and strategic interdependence

Trelleborg had enhanced its product palette and became both internal supplier and buyer of products of Dynaflex after the acquisition. By consolidating Unifluid and Dynaflex, Trelleborg expected some technical economies in the production department and also in invoicing as the invoicing would be handled centrally by the business unit Trelleborg Industrial Hose.

Before the acquisition of Unifluid, Trelleborg did not have any products competing with Dynaflex's products. Trelleborg was buying composite assembly hoses for uses like in gas stations for example from Dynaflex. Dynaflex was purchasing hoses in order to produce these composite assembly hoses from another producer, but after the acquisition, Trelleborg became the supplier of these hoses.

Integration has been undertaken, both on an organizational level and IS level. The organizational integration was managed by Trelleborg with one overall responsible person. One person formerly employed by Dynaflex was responsible for the consolidation of the production between Unifluid and Dynaflex. The cooperation was described by several interviewees as very positive and productive with no serious problems emerging.

The aim of Trelleborg was not to acquire a company that was already full flourishing but rather to see future potential and to develop the company and introduce its products in new countries. For example Trelleborg has introduced Dynaflex products in the United Kingdom where Dynaflex previously did not have any business.

Trelleborg planned to leave this small unit relatively undisturbed as they were 'doing fine' in what they were doing. There was nothing to suggest that it would be better to move them, to split them apart or to fully integrate with another unit. Trelleborg's view on them is that of a relatively independent unit which is doing their job fine.

4.2.4 Information system layers

Before the acquisition of Dynaflex, the company was integrated in the ERP system of Manulli. This ERP system involved a JD Edwards version A73 release 11 on an AS400 platform. The JD Edwards ERP system included functions for sales, stock and financial management. A local network was established in Sancheville and this was an ethernet network connected in emulation TN5250 via TRANSPAC X25 from Sancheville to the central site in Carquefou (near Nantes).

The basic information technology was reused at the target company. Communication services such as email were implemented, the units share their databases and an intranet is available. Business transactions such as sales, stock and financial management were integrated fully. The production system for the target unit was not implemented completely.

The integrated Movex system offers full information visibility to the superior Trelleborg Group. This means Group managers and executives can see all relevant information, like sales figures for example.

4.2.5 Information system integration architecture

One week before the contract was to be signed the IT department of Trelleborg Industrial Hose was approached and told that the current owner of Dynaflex was going to continue to support and keep alive the current IS for only six months more. In March, 2004 the contract was signed and the deadline for the It department to integrate the old system at Dynaflex into Trelleborg Industrial Hose's Movex ERP system was set to September, 2004. This was not a choice but part of the M&A deal as the unit cannot continue operating the former owner's ERP system, JD. Edwards. The project team consisted of the chief executive of IS and operations, one IT manager, two junior IS managers, and occasional external IT consultants.

As the Dynaflex unit was using the ERP system of another company there was never a choice whether to do something or not, the system had to be replaced. The new management had basically three choices, either to implement the ERP system which had been implemented nearly throughout Europe, to implement part of this ERP system, or to do nothing. The last option was excluded quite quickly as some form of IS was necessary for the new unit. After a two day visit to the site the decision was taken to integrate the new unit to an adequate extent into the existing ERP System of the group. Project plans, milestones and time frames were made in order to manage the system integration. As the Trelleborg group already had implemented the Movex system in many other European sites they had experience from this work and were able to profit from this fact in the Dynaflex unit.

The project team was confident that the given time frame for the integration was sufficient because at this time Trelleborg Industrial Hose was in a process where they had already integrated seven other national units into their Movex system which is used to manage the entire business and when integrating the other national units the scope was around 500 persons compared to Dynaflex which had a personnel of 20 persons. Also the sales department did not want to implement a too complex IS since Dynaflex at the time was a small, efficient and flexible company and if the full Movex package with all modules would have been implemented it would have destroyed this flexibility. Another aspect is that Trelleborg Industrial Hose only had an interest in visibility of finished products which meant that processes like finance, sales logistics etc. except production were implemented and not the complete production module, as it is the most complex one to implement in an IS (according to the interviewees). What was done was that the complete system existing at Dynaflex was replaced with Trelleborg's ERP system, Movex.

The initiative step was to send two people from Trelleborg to the site in France in order to get an overview of the situation and the processes being employed in the company in particular. In this first assessment a list of processes was created which would be necessary to implement in the Movex system. This was done in just two days and after this visit to the site, management decided to implement part of the European wide system, excluding most of the production planning in order to keep the flexibility wanted for the unit. This means that workers report in the system what has been produced and what input material has been used to do that. In the next step two junior IT executives

started implementing the processes in the Movex system. One of them was the programmer and this person was able to handle nearly all of the programming work necessary. In some parts of the work this person had help from external ERP consultants. The other junior IT executive's responsibility was to model the processes and to test them. Additionally after the "go live", as they called it in the interview, this person also stayed on the site as support and help to the employees in the early stages of the new way of doing business. As the Movex system was already implemented in many other sites of group, most of the processes which needed implementation already existed in the system and therefore the programmer was able to reuse them as they only needed minor adjustments to the Dynaflex unit. According to the responsible for the process modelling, there were only two or three processes which needed to be implemented "from scratch", meaning that they could not reuse any pre-existing process in the system.

In 1998-1999 Trelleborg Industrial Hose had eleven companies and distribution centres in eleven countries and seven ERP systems to manage these different unit's activities. This means that there were at every business unit a local financial team, IT- department and application service provider. Now Trelleborg Industrial Hose has one invoicing company, two distribution centres, two ware houses, one financial department, one IT-department and one IS. The Dynaflex unit is integrated in the European Movex system of the Trelleborg group. It is represented as a logical unit just as all other units of Trelleborg. This means it is one company in the ERP system and physically connected to the servers of the group. The Dynaflex unit is invoicing now through the common Movex System just as the other Trelleborg Industrial Hose units. Management of the Trelleborg group has full access to the information in the system and the Dynaflex unit can access all the group's data relevant to their unit and general information available to all units. As the unit is fully integrated and functional there are no plans for further integration regarding this unit. The enterprise wide system is though constantly under construction and development, and the group is always watching out for new developments which might improve their system.

The IS integration was the facilitator for the organizational integration, as the IS was the basis for the new way to do business and the new unit was able to continue their work after the launch of the new system without any interruption. Therefore the organizational integration was terminated at the same time as the IS integration.

4.2.6 Synergy

When the Dynaflex and Unifluid unit were completely consolidated there was one production line redundant. This line was disassembled and shipped to China where it was reassembled and used to start up production in this second location. Another synergy effect occurred in invoicing which is handled centrally by the Trelleborg Industrial Hose Unit.

Also, Synergy occurred in adaptability to new business demands. This means that when there is the demand to change the IS due to new business challenges the adaptation of the system can be handled faster now compared to a situation where Dynaflex would have its own unique tailor made system for example. As they are part of a bigger organization now there is a central group responsible for IS changes. This group is able to reuse knowledge on, and processes in the system from other cases and therefore the entire process from planning to implementation of IS changes is more effective. As this European wide system was introduced gradually to the Trelleborg group, the interviewees stated that there is clearly a difference in the adaptability. Before units were able to contact this central group to take care of their demands, they had to call in external consultants, which did not have the required knowledge of the group ready available. Therefore the duration was longer due to gaining the

necessary understanding of the problem and also solutions had to be tailor made as there were no sources of reusing processes from other systems. Additionally costs were also higher due to the hiring cost of consultants.

4.3 Summary

The way Trelleborg Industrial Hose set up their IS lead to a fast integration and made it possible to conduct their business in a new way, which is more flexible, easy adaptable and information visibility has increased. The re-usage of knowledge gathered through earlier implementations has made it a simple matter of repetition and laid the ground for the positive outcome. The IS architecture of the European wide system (Movex), the experience gathered through the implementation of this, and the fact that this knowledge was concentrated on the central group of key persons doing this work rendered this positive outcome possible.

5 Analysis

In this chapter we will analyze the empirical findings of the previous chapter in regard to the key concepts we compiled in our theoretical chapter (see section 3.4). This means we will classify the findings of the previous chapter to the models in our key concepts. The discussion of this classification will be conducted in the next chapter Discussion.

5.1 Pre-merger relationship

The Trelleborg group was buying composite hoses from Dynaflex before the acquisition. Trelleborg's aim was to integrate it in its value chain Therefore the pre-merger relationship can be called backwards vertical as Dynaflex was the supplier of composite hoses for Trelleborg Industrial Hose.

On the other hand Trelleborg's previous acquisition Unifluid had products in the same area and therefore the pre-merger relationship would qualify as horizontal. A close organizational integration was undertaken with the previously acquired unit Unifluid. An exchange of information and expertise took place within their business area and the economies of scale were used, such as enhanced production that emerged out of the acquisition.

There is even the possibility to classify certain aspects of the pre-merger relationship as concentric, although the business was not unknown to Trelleborg and the integration of physical parts actually took place, but Trelleborg gained the rights to keep certain brand names for a limited period of time.

5.2 Degree of friendliness

The M&A deal was wanted from both sides and was well perceived by the target and the objective was to reach a fair deal for both companies. The problem connected to collaboration mergers of spreading information concerning the merge to the employees was dealt with successfully as can be seen in the findings. Therefore the deal would be placed at the postion of Collaboration on the hostility continuum from Buono and Bowditch (1989).

The former owner of Dynaflex did not regard Dynaflex as part of their core activity but Trelleborg was able to see their business as part of their organization and wanted to develop their business even further. Therefore on the hostility continuum from Buono and Bowditch (1989) this deal would be placed between at the position of organizational rescue. This means the takeover was friendly and not perceived hostile by the target.

5.3 Organizational autonomy and strategic interdependence

The intention of Trelleborg Industrial Hose was to let the Dynaflex unit continue doing their business as they are producing satisfactory results. Therefore the need for organizational autonomy is low in the new unit as they have the necessary degree of freedom.

The need for strategic interdependence is high as the connection between Trelleborg Industrial Hose and the new unit is that of a supplier and buyer. Trelleborg is supplying the Dynaflex unit with its raw material and Dynaflex's product is supplying Trelleborg Industrial Hose.

Therefore the integration degree according to Haspeslagh and Jemison (1991) would be described as Absorption.

5.4 Information system layers

The Infrastructure layer was integrated as communication services such as email were implemented, the units share their databases and an intranet is available. Therefore the infrastructure layer was integrated to full extent.

The transaction layer includes all business transactions and most of the packages were implemented fully. The production package for the target unit was not implemented completely, therefore we can state that the transaction layer was integrated but not to full extent.

The informational layer was integrated and it was integrated to full extent, as the Movex system offers full information visibility to the superior Trelleborg Group. This means Group managers and executives can see all relevant information, like sales figures for example.

None of the parts of the Movex system implemented at the Dynaflex unit qualifies as a Strategic IS at first sight. But taking the new advantage of increased adaptability into account the whole systems could be interpreted as strategic IS in case it creates a competitive advantage. As we do not have any proof of a case where this competitive advantage was created in our case company we cannot state that the strategic layer was integrated.

5.5 Information system integration architecture

The chosen information system integration architecture solution was that of an enterprise wide solution, also called Enterprise Resource Planning System. The system is called Movex and developed by the Swedish company Intentia. It is a complete Enterprise Resource Planning system which can be customized to support all business demands.

5.6 Synergy

The synergetic potential of this deal can be found mainly in technical economies, but there are also indications for pecuniary and diversification economies. The technical economies are identified in the production area and also in the administrative sector, i.e. invoicing.

As the Dynaflex and Unifluid unit were completely consolidated there was one production line redundant. The production level was held stable and the amount of resources necessary to reach this level of production was reduced. Therefore this is a case of a technical economy of scale.

This redundant line was disassembled and shipped to China where it was reassembled and used to start up the production in this second location. This means that the production was raised with same amount of available resources, in this case the production line, which qualifies it as an additional second case of technical economies of scale.

Because of the IS integration, the Dynaflex unit is now invoicing through the common invoicing system shared by all units in the Trelleborg Industrial Hose business area. This can as well be called a technical economy of scale as the physical processes were altered so that the same quantity of output is produced using fewer resources. Another effect of this change is that the way of doing business is unified within the business area, which has a positive effect on the customer experience and the appearance of the whole business area. This improvement of the overall image is possibly the basis for further improvements in economies of scale, as the same amount of input can produce higher outputs, for example customer requests might be handled more efficiently through centralization as information visibility is raised by the usage of a common system throughout the business area.

Another synergy effect was reached by the IS integration, which nature is also of a scale economy. This effect is addressing the adaptiveness of the IS system and the pace of the adaptiveness. When one unit is in need to adapt its IS it does not need to develop this solution by itself or with the help of external consultants anymore, there is now a central group taking care of these adaptations. In many cases there is already a solution in store as another unit might have had the same or similar problem or situation before. This increases the reusability of the system modules and at the same time decreases the respond time to the problem. Cost advantages are also visible as no more external consultants are necessary and the problem of knowledge transfer is also addressed as the knowledge to solve the problem is existing inside the firm and it stays inside the firm which makes it available for reuse and therefore prevents from reinventing the wheel. This possibility enables new ways of doing business and therefore qualifies as proactive usage of system integration in the sense of McKiernan and Merali (1995).

Pecuniary economies are not clearly identified in this case, though it is possible that the power to dictate market prices has increased, but this has not been proven. On the other hand as Trelleborg is now the supplier of at least one input material for the new unit, the new units position towards its suppliers has been improved, which can be interpreted as a rise in power in the sense of pecuniary economies. Also the position towards external suppliers has improved because of the power of the new organization compared the single Dynaflex unit at least.

When it comes to diversification economies the case is not clear either, as they were not part of the motivation for the deal, at least not from the side of the Trelleborg group. But on the other hand if the acquired new unit would be in need of capital, it would be easier to obtain when backed up by a company like the Trelleborg group, compared to the original unit with about twenty employees. So from the side of Dynaflex at least, diversification economies have arisen. As the Dynaflex unit is

producing a niche product which is intolerant towards market changes, also the risk attributes have changed for the Trelleborg Industrial Hose group, but this might be of a minor character because of the relative size of the new unit towards the whole group.

5.7 Summary

The different aspects of the acquisition have been explained in regard to the theories collected. Some factors were found to have greater influence on the outcome of the integration, such as IS integration architecture and especially the fact that the implementation team had about ten years of experience of doing this kind of work within the company. The re-use of knowledge from previous cases made the implementation predictable and foreseeable in regard to the requirements specification for the system and the implementation of these requirements. The result was a system which meets all the requirements and even enables new ways of doing business in the sense of McKiernan & Merali (1995).

6 Discussion

In this chapter we will discuss the analysis of the findings as well as point out mismatches we discovered between the existing theories and the analysis of our empirical material. The discussion will also deliver propositions to enhance the existing theory in the fields where we discovered new relevant aspects. The conclusions from this will be further discussed and developed in the next chapter.

6.1 The significance of the factors influencing proactive IS integration

The difficulty of determining the degree of the influence of various aspects on the proactive IS integration leaves the question unanswered whether the models are relevant or trivial to answer the research question of this thesis. This fact is intercessional for the models as it is up-to-date impossible to rule out their influence. Therefore they should be included in the analysis. Because in our case company all the factors turned out to be beneficial to proactive IS integration they might seem redundant, but when considering the opposite case which would be that they turned out to be disadvantageous, they gain in significance on the other hand. For example if the takeover was perceived as hostile instead of friendly the IS integration might not qualify as proactive as the barrier to access knowledge might hinder the outcome to qualify as proactive.

6.2 The role of experience and knowledge in the case company

The reason for this satisfactory result can amongst others be found in the fact that the Dynaflex unit was working already before the acquisition according to an ERP system, therefore all the processes were already streamlined in the organization to fit the process oriented view on business an ERP solution requires, which made the successful implementation of the system easier.

During conducted interviews it became evident that the integration process of Dynaflex also went smooth because Trelleborg Industrial Hose was at a stage in the process of integrating all existing units where they had integrated several other national business units already, through which valuable experience was gained. Also Trelleborg's approach is not to build a new application in every country rather than to extend the central Movex system and integrate other national business units in to this instead of working on local applications or systems.

Back in 1998-1999 Trelleborg Industrial Hose had eleven companies and distribution centres in eleven countries and seven ERP systems to manage these different unit's activities. This means that there were at every business unit a local financial team, IT- department and application service provider.

Now Trelleborg Industrial Hose has one invoicing company, two distribution centres, two ware houses, one financial department, one IT-department and one IS to manage which provides visibility for all these departments. This also means that Trelleborg Industrial Hose has full visibility of the various business units through the central Movex system. Major rationalisation has been possible due to the IS integration in several cases and shows the extent of the experience gained.

IS integration is one way to take control over the acquisition process which Trelleborg is employing permanently in order to achieve its aggressive growth rate. If the company puts in the right resources to integrate the acquired companies IS into its own it will make it easier later on in both the just acquired unit as well as in future acquisitions. The understanding of the business will increase, full visibility will be achieved and business optimization will be made possible to a greater extent.

Before Trelleborg Industrial Hose integrated the different national business units into the central Movex system it was very difficult to understand the different business units' work due to both natural language and programming language differences etc. But now when Trelleborg has integrated nearly all the units, the functionality which supports all integrated national business units is available for reuse. Out of this a common model which is valid for all these countries was developed in order to support and make future acquisitions easier.

This has led to an optimization of business, because when a country's business units have some trouble it is easier for the unified IT-department at Trelleborg Industrial Hose to understand what the problem is and provide support for them as the system has full visibility and due to the common programming language used. Another aspect which is found important by the interviewees is that, concerning IS one needs to have internal personnel with sufficient knowledge and a full picture concerning the internal IS so that one does not have to depend on external consultants in every case of system change demand. In some units of Trelleborg the dependency on external consultants is still high, though this dependency is decreasing steadily. Units always having to wait for external consultants to rethink especially when the solution can be provided by internal employees, can be seen as a waste of time and money.

The fact that experience in building up a multi-national ERP system and the relation between this experience, knowledge and the IS integration architecture, was not described earlier in the academic literature. The analysis according to the available literature did not take this fact into account nor delivered other explanations for the successful implementation. Therefore we propose the extension of theory in order to provide this fact with adequate significance to reflect its importance.

6.3 The role of experience and knowledge in proactive IS integration

The discussion above proposes the extension of the existing theory in the field regarding the experience and knowledge of IS integration. The role experience and knowledge are playing has not been explained previously in regard to a proactive use of IS integration. The build up of knowledge in the company during the integration of all the European units is essential to make a proactive integration possible, and especially in combination with the IS integration architecture we found this to be essential to the outcome to be proactive IS integration and therefore synergy effects were raised.

We argue that a definition of proactive IS integration should take the aspect of knowledge and prior experience in account, in regard to the specific case of IS integration. As the required knowledge is partly tacit as well as case specific, we cannot give a detailed list of concepts a company needs to be proficient with in order to achieve proactive IS integration.

We can though at least state that some of this knowledge is related to the IS integration architecture, more specific the company needs to possess ample knowledge and experience to integrate a new unit into their information system so that this process becomes manageable and the outcome predictable. Prior experience from other integrations should render this process a matter of simple repetition and this means this project should not need to include external consultants or intensive education of integration project team members. This means that the acquiring company has more knowledge about what needs to be done in order to achieve proactive IS integration. Having this knowledge does though not guarantee the IS integration to become proactive.

It is not only knowledge about the IS integration architecture which is essential but also knowledge about processes which need to be implemented in the system. This means that related businesses offer higher probability for the integration to become proactive than unrelated. This relation between the businesses is described by the pre-merger relationship. The knowledge about processes has to be acquired not only from prior integrations but also in the specific case on site as all necessary details cannot be available to the IS integration project team at beforehand. The barrier to access this knowledge is determined by the degree of friendliness of the M&A in the specific case. In a hostile takeover the access to knowledge on internal processes is not as easy as in a friendly perceived takeover.

The type of knowledge described above is difficult to handle for companies as parts of it at least are tacit. Therefore this knowledge is not trivial to handle as it is embedded in key persons. Covering how this knowledge should be managed is not part of this thesis as it covers another field than our research area.

6.4 IS integration architecture in proactive IS integration

The set up of the European wide system enabled fast and simple integration which led to an adaptability which not only supports daily business but also facilitates fast adaptation to new business challenges. This qualifies as proactive IS integration. The system is an ERP system and in our case this fact turned out to be beneficial for the outcome to be proactive IS integration. The case company used the Movex system, and the question arises whether a system by another vendor might have been equally beneficial. We found indications that the vendor of the ERP system is not of relevance, as long as it meets all business requirements and technical requirements. The crucial thing the interviewees pointed out about the architecture was, that it was a unified system throughout Europe and that it was process oriented. Therefore we argue that a system by another vendor would have worked equally well, if it was an up-to-date, technically comparable and equally performing ERP system.

One of the synergy effects is directly linked to the IS integration architecture, namely the centralized invoicing. We cannot exclude the possibility of another kind of IS integration architecture to be equally adequate to integrate IS proactively but possibly the synergy effects would not have been realized. Which IS layers the IS integration architecture needs to integrate is depending on the

organizational autonomy and strategic interdependence as they determine the amount of information which needs to flow and the degree of information visibility.

We argue, the IS integration architecture must allow for IS integration without *restructuring the IS architecture*. On the infrastructural level this means that the acquiring unit has to have the necessary infrastructure in order to scale up the system to reach the required performance for the integration of the new unit. In this definition there would be room for scaling up the system of the acquirer, for example replication of servers in order to reach the required performance. If the changes to the system which are necessary involve major redesign, and for example introduction of new server software which requires learning a new system would not qualify as proactive.

6.5 The proposal of a proactive capability concept

On the basis of discussion in the section above we argue, there is no such as two categories of proactive and reactive IS integration. This should be considered a continuum between the two end poles proactive and reactive. The discriminating factor should be the scope of change necessary to achieve IS integration. Furthermore, we propose the definition of a proactive *capability*. By introducing the concept of a proactive capability the problem of defining a determining discriminator between proactive and reactive IS integration becomes not indispensable but it sets the focus on the determinants of proactive IS integration. Focusing on the proactive capability and its determinants leaves the term reactive IS integration redundant as the adequate alternative to this would be that a company does not possess the capability to integrate one specific unit proactively.

The proactive capability is depending on the key concepts we deduced from existing theories as well as on knowledge and prior experience, and is only valid for integrating one specific target unit:

- *Pre-merger relationship:* What relation existed between the two companies before the acquisition?
- *Degree of friendliness*: Did the target unit show sufficient cooperation in order to provide the necessary understanding of the firm and its processes?
- *Organizational autonomy and strategic interdependence*: How are the units interconnected after the acquisition?
- *Information system layers*: What layers of the target company's information system need to be integrated?
- *IS integration architecture*: What IS integration architecture needs to be implemented in regard to the IS layers that have to be integrated?
- *Synergy*: In regard to previous factors, what synergies were gained, or how are synergy effects affected by the IS integration?
- *Knowledge and prior experience: Does the company possess the required knowledge on the previous points and experience from prior IS integrations in order to integrate the target unit proactively?*

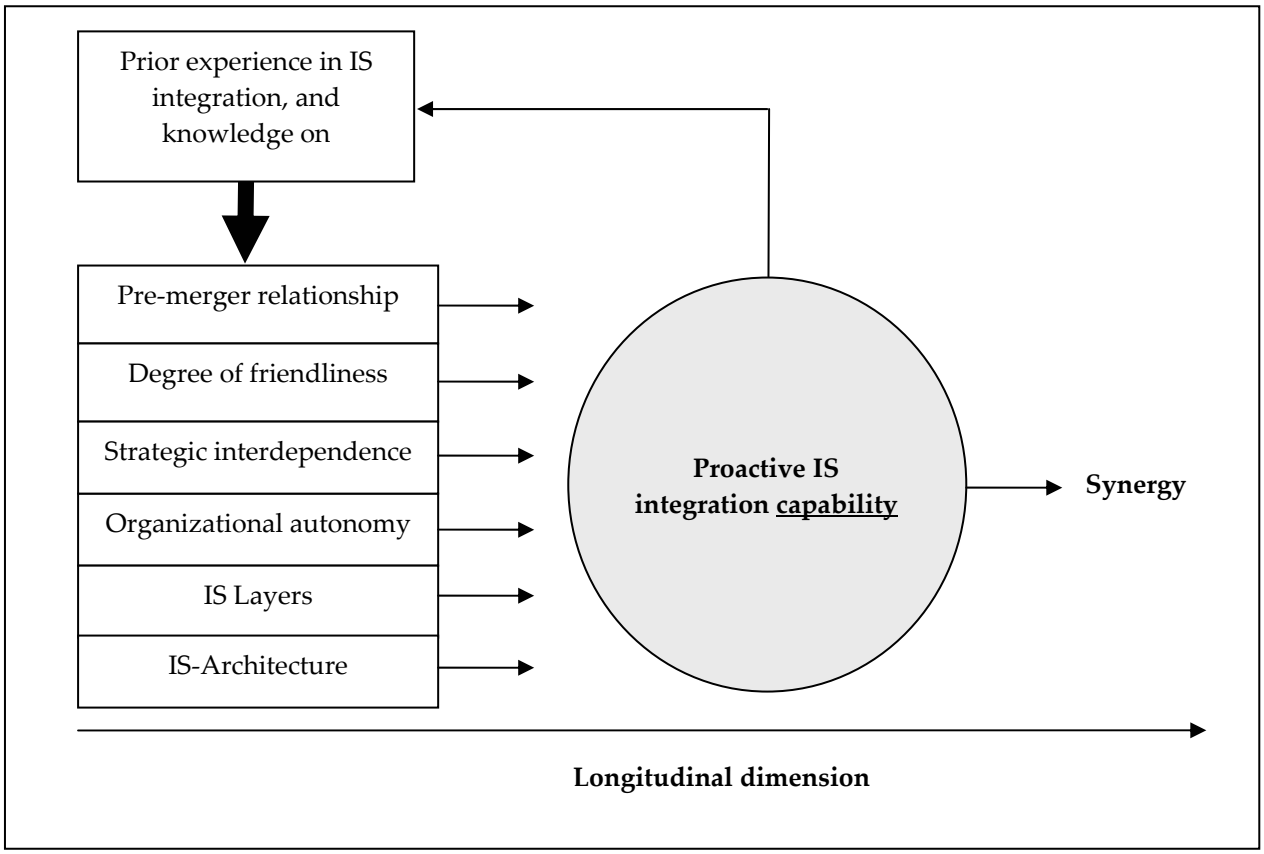

Figure 6.1: Factors influencing the proactive IS integration capability in M&A.

We enhance our model developed in the theoretical chapter by three factors, namely *prior experience and knowledge, longitudinal dimension, and feedback*. We altered proactive IS integration to *proactive IS integration capability.* The longitudinal dimension is representing the fact that the proactive capability is case specific and a company might be able to integrate one unit proactively in one case but not another unit in another case. The feedback is representing the fact that every case of integration reinforces the prior experience and knowledge on IS integration to some extent at least.

Changing the concept of proactive IS integration to having a capability to integrate a unit in a proactive way should lead to a shift in a company's view on IS integration in a M&A context with implications for the entire IS integration process. We argue it improves a company's competence in analyzing target companies' information systems integration, as it takes more factors in account than existing theory suggests, for example the role of knowledge and experience, and the view changes to a context dependent one.

6.6 Proactive IS integration capability in Henningsson's tentative framework

The proactive IS integration capability is suitable to develop the tentative framework of Henningsson (2006) in the dimension F (IS integration role). It is possible to alter this dimension to proactive IS

integration capability in order to reflect the enhanced view of the proactive IS integration concept we developed in this thesis. This dimension would therefore not have different possible states as before (reactive or proactive), thus the dimension would reflect the fact whether a company has the proactive IS integration capability to integrate a new unit, or not. In case the company does not possess the capability it would be forced to integrate the unit reactively.

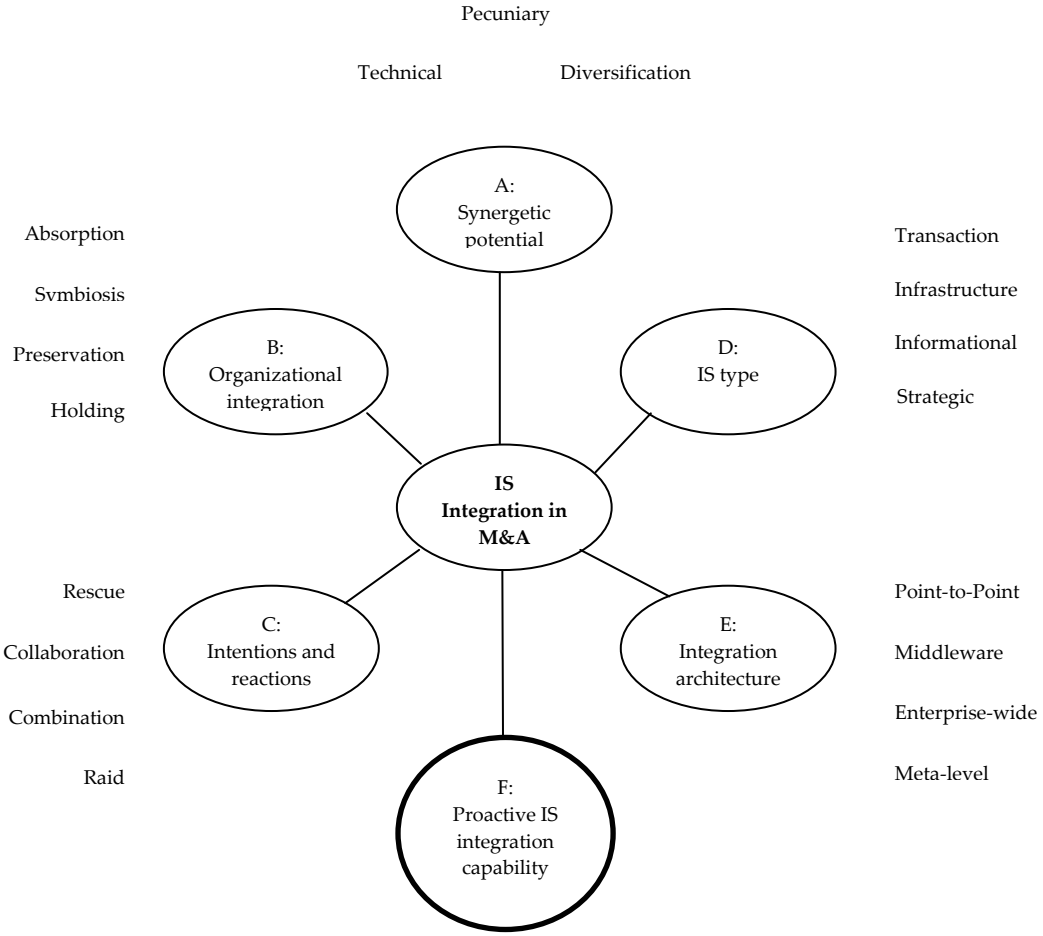

Figure 6.2: A possibility to further develop Henningsson's (2006) tentative framework.

6.7 Proactive IS integration capability from a strategic perspective

The proactive capability can be placed in a strategic model such as Barney's Resource Based View (Barney, 1991). According to Barney's (1991) definition, all assets, capabilities, organizational processes, firm attributes, information, knowledge etc. that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness qualify as resources. Thus, according to this definition, the proactive IS integration capability qualifies as a resource.

Resources should be valuable, rare and costly to imitate and organized and distributed optimally internally in the organization in order to create a sustained competitive advantage. The property of valuable is difficult to address as it is difficult to measure the value of an IS and also a proactive

capability is difficult to measure, especially as it is case specific. A proactive capability would though raise the value of an IS. Up-to-date a proactive capability is rare as this issue has not been addressed since recently. The issue of being costly to imitate is applying to the proactive capability as this capability is socially complex, tacit and intertwined between people and IS. It may even be impossible to imitate as the imitators would have to both deconstruct their own system and create a new one (Hedman & Kalling, 2002). The definition further states, that resources should be organized and distributed optimally internally in the organization. The capability to integrate a new unit proactively is distributed inside a company in key personnel as well as in the company's information system. More precisely, the key personnel possesses the knowledge and experience on how to integrate, and the information system has to be able to support this activity according to the conditions to meet proactive IS integration we compiled.

The concept of resources has been developed further by distinguishing between resources and the ability to use it. Capabilities can be considered as the ability of firms to integrate and reconfigure internal and external resources and activities to match the environment (Hedman & Kalling, 2002). These capabilities allow the firm to create new products, and to respond to changing markets. Capabilities are based on learning, expertise and technical opportunities, and depend on the nature of the environment of the firm (Hedman & Kalling, 2002).

This can be compared to a company's capability to produce certain new products, e.g. basic metal products. This company would probably not have the capability to produce basic plastic products. In order to achieve this, the company would need to acquire new machines as well as qualified plastics production personnel. The same logic applies to the proactive IS integration capability, in one case the company possesses the capability to integrate a new unit proactively, in another case the company would need to alter or enhance its information system and acquire the necessary competencies in key personnel in order to achieve proactive IS integration. This way of integrating would though not qualify to as proactive IS integration, as the definition for proactive states that, IS has to facilitate the organizational change, and not - has to be changed to enable the organizational change.

6.8 Limitations

The conclusion has its limitation in the generalizability but the conclusions can be generalized to a certain extent. The introduction of the concept of a proactive IS integration capability is deduced from only one case study, the logic behind the concept is though generic and therefore might be applicable also to other cases.

Concerning the issue of a build up of knowledge in key persons, the size of the company is a determinant of this as our case company showed to be big enough to realize the build up of knowledge in key persons which enabled them to improve their way to realize M&A deals and therefore leverage the anticipated synergy effects. In a company smaller than in our study the build up of knowledge would not have been the same way and this would not lead to the same competency in integration work in M&A deals. In companies bigger than ours the amount of knowledge necessary would exceed the capabilities of individuals and therefore the knowledge has to be managed in a sense which makes it accessible through a project oriented type of work.

6.9 Summary

The analysis showed that the existing theories in the field explain most part of acquisition and is sufficient in these parts of the phenomenon without relation to each other. Though the significance of knowledge in the sense of prior experience linked to key persons in the IS integration team has not been highlighted sufficiently. This knowledge the key persons had in our case had a positive influence on the planning as well as implementation of the IS and the extent of this factor makes it probable that it was one of the key determinants to the positive outcome. This shows to be related to the IS architecture and without it the outcome would not have been the same. This led to the further development of our working concept of proactive IS integration, and we added three items, prior experience and knowledge, the longitudinal dimension, and feedback. We also altered the proactive IS integration to proactive IS integration capability. This leads to a change of view for companies, which improves their evaluation of possible IS integrations. The longitudinal dimension reflects the fact that the proactive IS integration capability is case specific, and the feedback represents the process of reinforcing experience and knowledge by every case of integration.

7 Conclusions

The discussion delivers a proposal for a development of the term proactive IS integration, in regard to its relation to prior knowledge on IS integration and the IS architecture, which leads to the concept of a proactive IS integration capability. The development proposed by us is that a company should think about whether it has the capability to integrate one unit in a proactive way. Additionally the relation between proactive IS integration, IS integration architecture and the leverage of synergies has been developed. In this chapter we will document the purpose of our thesis as well as explicitly give answer to our research question.

7.1 The research question

In order to fulfill the purpose of our thesis we stated a research questions in the introductory chapter. In the course of the thesis we gave a detailed account to answer the question. We will though give an explicit recapitulatory answer to the question in the next section.

The research question was, *does proactive IS integration lead to the leverage of synergy effects?*

In order to answer this question, we had to develop a concept of *what is meant by the term proactive IS integration in M&A.* In our theoretical chapter we were able to establish a working concept of proactive IS integration out of the existing literature and compiled a model of key concepts. This model was used to analyze our case company and we came to the conclusion that our case qualifies as proactive IS integration, and the case even led to the enhancement of the term proactive, which in turn led to the concept of a proactive IS integration capability.

As we were able to establish a working concept of proactivity, we were able to analyze whether the proactive IS integration led to the realization of synergy effects, and we in fact found synergy effects to be raised out this circumstance. The character of the synergies, is that of technical economies of scale and to be precise, are found in the central invoicing system and the ability to adapt to new business demands.

7.2 The purpose of this thesis

The *purpose* of our thesis, as stated in the introduction, was to *describe and explain how proactive IS integration can affect the relationship between IS integration and the M&A process by potentially leveraging synergies.*

We came to the conclusion that the build up of a proactive integration capability is essential to achieve proactive IS integration. This capability is dependent on different factors as described above in the previous chapter (Discussion). The capability is case specific and a company cannot be sure to be able to integrate every acquisition proactively. The case company was able to integrate the target unit in a proactive way, and the M&A process was affected by this circumstance in three areas.

Firstly, the IS integration was affected. The case company was able to predict and plan the IS integration so that both the deadline and specifications requirements for the integration were met. This means the company had knowledge about what needs to be done in order to achieve proactive IS integration. The resulting system was fully integrated in the European wide system, and complete visibility was achieved. The system is easy to maintain and easy adaptable to new business requirements as the system is maintained and developed by a central group, which is able to reuse knowledge from other units. Because of the centralized system the new unit is able to invoice through the groups invoicing system.

Secondly, the organizational integration was affected. As the implemented IS met all the requirements regarding specifications requirements and deadline, the organizational integration was achieved at the same time as the IS integration. Because the group took care itself of the IS integration, it was able to reuse knowledge from other units and by modeling the processes for the IS integration, knowledge was gathered about the new unit, which can be reused at later stages for example for adapting the unit to new business challenges.

Thirdly, synergy effects were raised which can be linked to the proactive IS integration. The centralized invoicing is the most obvious one, though this might have been achieved without proactive IS integration it is one of the outcomes in this case and it was achieved without additional system development. The other synergy effect which can be linked to the proactive IS integration is found in the ability to adapt the IS to new business requirements as this is accomplished now by the central group which has accumulated knowledge and experience from previous IS integrations and IS developments. This re-usage of knowledge as well as processes in the system causes the leverage of additional synergies.

7.3 Recommendations for creating a proactive IS integration capability

There are some general recommendations possible to deduce from the model in order to create or nurture a proactive IS integration capability in a company in order to increase the long term acquisition success, such as: It is generally possible to improve the proactive capability, and this is possible in the case of the IS architecture. If the IS architecture allows for easy integration of new units, the better the proactive capability. Therefore the IS should be flexible, easily adaptable and compatible to other systems and IS needs should be anticipated. Additionally, the more a company knows about it's IS, the more easy it will find it to integrate new units, therefore it should try to handle the IS integration work internally by involving key staff and not use external consultants in order to facilitate the build up of knowledge within the company. A company should try to gather knowledge about what needs to be done in order to achieve proactive IS integration, get an overview over this field and align and communicate objectives in a long term perspective. The company should plan and review the process and not forget the feedback for the next M&A deal. Our model of proactive IS integration

can be used for analyzing the capabilities in regard to different scenarios as the model is case specific and does not represent a general proactive IS integration capability.

7.4 Future research proposal

In order to increase generalizabilty we propose a quantitative approach for reaching statistical generalizability. Additionally, it would be interesting to examine the degree of influence of other factors on proactive IS integration, such as firm size e.g. in a comparative research approach.

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8.2 Interviews

Interview 1: Chief Executive (IT and Operations): male, interview took place at the company's local branch office; November 20th, 2006 between 9.00 and 10.00, Trelleborg, Sweden.

Interview 2: Junior IS manager (Process mapping): male, interview took place at the company's local branch office; December 13th, 2006 between 15.00 and 15.45, Trelleborg, Sweden.

Interview 3: IT manager (Hardware integration): male, phone interview, January 4th, 2007, between 9.00 and 9.45.

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9 Appendix: Interview Guide

Introduction

- Would you like the interview to be treated confidentially?
- Do you mind being recorded during the interview?

Warm-up

- What position do you have at the company?
- How long have you been working for the company in this position?
- What is your educational background?
- What working experience do you have?

Main Session

Topic 1: Pre-merger relationship

- What was the integration objective?
- How, when and by whom was it decided?
- Was the decision made at one point or was it an evolved decision?
- What was the relation between Trelleborg Industrial Hose and Dynaflex before the acquisition?
    - Market relation?
    - Product relation?

Topic 2: Degree of friendliness

- How would you characterize the acquisition, rescue, collaboration, combination, raid?
- What was the financial situation before the acquisition?
- How was the takeover perceived?
- Future of Dynaflex, if not acquired by Trelleborg?
- Did people leave the company? Who? At which levels?
- Did the view change over time?
- Was anyone transferred to Trelleborg? Or vice versa? Which effect did this have?
- Were there any conflicts?
- Were there other potential buyers?
- Do employees feel like a part of the Trelleborg group?

Topic 3: Organizational autonomy and strategic interdependence

- Desired level of integration?
  - Strategic interdependence?
  - Organizational autonomy?
- Who was managning? From Trelleborg? From Dynaflex?
- By which means?
- Formal?
- Nonformal
- Was IS an general management issue?
- Timeline: When did the process start? When was the organization integration terminated?
- Who was in the project?
- Project plan? Milestones? Major events? Time Frame?

Topic 4: Information system layers

- What kind of IS existed at Dynaflex before the acquisition:
  - security
  - information
  - transaction
  - strategic
  - infrastructure
- Do you have a different taxonomy, like for example: production, financial, etc.?
- Age of the systems at Dynaflex?

Topic 5: Information System integration architecture

- Which IS have been integrated? Why? How?
- Which solutions have been implemented? Technology?
  - Point-to-Point
  - Middleware
  - Enterprise wide
- Which technical links are there to other Trelleborg departments?
  - Which information flows?
- Future integration plans?
- How has the decision been made on how to integrate IS? By whom? When?
- How have the plans been implemented? Who has been responsible?
- Formal?
- Nonformal?
- Was IS a general management issue?
- Is IS handled proactively or reactively? How was it handled in the project?
- Do you employ any sort of learning life cycle in order to learn from previous acquisitions for future acquisitions?
- Do you have or did you create any measures for IS integration or synergy effects?
- Which things or activities did have a positive influence on the success of the integration and merger in general?

Topic 6: Synergy

- What kind of synergies where expected and which have been gained?
  - Technical?
  - Pecuniary?
  - Diversification?

Cool-off session

- Do you have any additional opinion or information concerning the IS integration process connected to the Dynaflex acquisition that you would like to add?

Closing session

- At last we would like to thank you for taking valuable time to answer all our questions.