KEY FACTORS INFLUENCING THE SUCCESS OF IT INTEGRATION DURING MERGERS AND ACQUISITIONS

Softwaregigant SAP koopt clouddienst SuccessFactors

AMSTERDAM - De Duitse softwaregigant SAP gaat de Amerikaanse softwareleverancier SuccessFactors overnemen voor een bedrag van 3,4 miljard dollar. SAP wil met de aankoop zijn aanbod in clouddiensten versterken.

Dat meldt persbureau Reuters.

[...] aandeel voor het in [...]cessFactors. Dat is [...]lotkoers op vrijdag, [...]sdag.
[...]p cloudgebaseerde [...]uikt door bedrijven [...]nemers te

[...]sitie van SAP in de markt van cloud computing. [...] data niet meer enkel op iemands pc of [...]ie van overal op de wereld te raadplegen zijn.

[...] SuccesFactors ko[...] een cloud computingbedrijf heeft ove[...] RightNow Technologies. Analisten v[...] terrein dreigde te verliezen aan het A[...]

SAP-topman Bill McDermott zegt da[...] helpen zijn doel van meer dan 20 mi[...] bereiken. SuccessFactors heeft mee[...] dan 15 miljoen abonnees in 168 land[...] drie maanden met 26 procent gested[...] marktwaarde heeft van ongeveer 2,2[...]

Overname Essent door RWE gaat door

DEN BOSCH – De overname van Essent door het Duitse RWE gaat door. Gedeputeerde Onno Hoes van Noord-Brabant heeft dat vrijdag in een vergadering van Provinciale Staten gezegd over de uitspraak van de rechter in Arnhem die een streep zette door de eigendomsconstructie die Essent en RWE hadden bedacht voor kerncentrale Borssele.

"Er is geen sprake van dat de deal wordt afgeblazen", nuanceerde de gedeputeerde eerdere dreigementen en grote woorden van RWE en Essent in de rechtszaal. Juristen bestuderen de uitspraak en beide bedrijven komen later vrijdag zelf met een verklaring, zei Hoes na contact met topman Michiel Boersma van Essent.

Noord-Brabant is de grootste aandeelhouder van Essent. (ANP)

Fusie Air France-KLM bespaart een miljard

NHD 5-10-06

VAN ONZE VERSLAGGEVER

DEN HAAG - De uit 2004 daterende fusie tussen Air France en KLM kan wel twee keer zoveel kostenbesparingen opleveren als aanvankelijk gedacht. Dat heeft KLM-topman Leo van Wijk verklaard.

De destijds geraamde besparingen bedroegen vijfhonderd miljoen euro, maar dat kan in vijf jaar tijd verdubbelen tot een miljard. „Dat lijkt een reële mogelijkheid," aldus Leo van Wijk. Volgens hem heeft de fusie tot nu toe al 660 miljoen aan besparingen opgeleverd. Hij stelt dat een verdere integratie van de twee luchtvaartmaatschappijen niet is uitgesloten, maar dat daar goede redenen voor moeten zijn. Volgens Van Wijk hebben beide vastgesteld dat 75 tot 80 procent van

hun aciviteiten niet geschikt zijn om in elkaar te schuiven, omdat Air France en KLM hun eigen identiteit willen behouden.

De kostenbesparingen worden gestoken in nieuwe vliegtuigen. KLM heeft verschillende Boeing 747's die al vijfentwintig jaar oud zijn, en zal haar MD-11 toestellen gaan vervangen. Van Wijk verwacht dat Air France-KLM zal investeren in China, waar de luchtvaart hard groeit.

Drie jaar na de fusie maakt Van Wijk plaats voor een opvolger. Waarschijnlijk stapt hij in mei 2007 op om bij de holding in Parijs te gaan werken. Zijn opvolger, naar verwachting Peter Hartman, zal zich in tegenstelling tot Van Wijk niet bezighouden met strategische beslissingen. Die worden in Parijs genomen, bij de holding.

Maurice van Ommen
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KEY FACTORS INFLUENCING THE SUCCESS OF IT INTEGRATION DURING MERGERS AND ACQUISITIONS

Master Thesis

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PREFACE

The third of September 2008 was my first day at the Utrecht University. It was a big change, which altered my perception of learning completely. The degree of independence and the mode of learning changed. My first examination was pretty heavy. I studied a lot and I still was not comfortable about it. Eventually, everything went well and I passed. After that moment, I decided that I wanted to succeed, no matter how much time and energy it would cost.

This thesis is the last step in finalizing the master Business Informatics and with that comes an end to my eleven-year career as a student. For now, I would like to take the opportunity to thank a few people in this preface, who were particularly important, without whom I would not have been able to finish this project:

Most importantly, I would like to thank my parents and sister for supporting me, for their confidence that I have experienced, and for giving me the opportunity to obtain my Master's degree.

My thanks also goes to my supervisors for their guidance, insight, feedback, and encouragement throughout the development of this thesis. Firstly, to my supervisors of the Utrecht University, dr. R. Bos and dr. H.H.A.M. Prüst. My special thanks to my academic supervisor, R. Bos, who have provided me with a lot of feedback and help with solving issues that appeared during the, and finalizing this thesis report. Secondly, to my external supervisors A. van de Bovenkamp, W.A.A. Kobussen, and R. Post from Accenture Consulting.

Next, I would like to thank my colleagues at Accenture. Their input has been of great support in obtaining information about important subjects of IT integration in mergers and acquisitions. Not only did they help me with information that was relevant for my research, they also provided me with a learning experience that will be useful for my future career. Moreover, I would like to thank all the experts that have participated in this research. This thesis would not have been possible without their crucial input. Finally, I would like to thank H. Jansma for his help to calculate the score critical success factors as well F. Noordstar and my uncle drs. R.C. van Ommen for checking this thesis for spelling errors.

Last but not least, I want to thank the friends that I have made during my school career. These friends gave me some distraction over the past eleven years, which made the career a lot more fun. J.A. Broekhuizen, W.J. Engelvaart MSc, H.A. ten Have, P.G.J. Kruiper, S.H.J. Smit MSc, A. Westerbeek, my thanks.

Conducting this study was not such a lonely task after all, considering the number and diversity of people I wanted to thank. What I do know is that this was one of the most challenging, exiting, and exhausting things I have ever done! Nevertheless, it was worth every second.

Kampen,

April 19, 2012

Maurice (Christian) van Ommen

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INTRODUCTION

1   INTRODUCTION

Organizations are engaged in mergers and acquisitions to accomplish various strategic objectives, including increasing their market share, eliminating competitors, gaining desired technologies, and expanding product lines. These organizations are faced with the importance and vital role of Information Technology in mergers and acquisitions. Major issues include the need to integrate business processes, workforce, corporate culture, applications, and diverse Information Technologies across the merging organizations.

An important prerequisite for the realization of the merger and acquisition objectives is the integration of Information Technology. Executives who underestimate the costs, time, effort and priority associated with merging Information Technology will face with unpleasant surprises. If an organization will be successful in integrating their Information Technology, awareness should take place in different key factors leading to an optimal IT integration product, "to strengthen the capabilities of the merged organization, and place the organization in a better competitive position" (Robbins & Stylianou, 1999). This research explores the literature and practical experience in the area of mergers and acquisitions from an Information Technology perspective.

This chapter elaborates on the context and goal of the research. The first four sections describe the context of the research, including the motivation, the problem statement, the scientific and social relevance, and the omissions in existing literature. The fifth section describes the goal of the research, which includes the research objective, the research questions, and the research deliverables. In the sixth section, the structure of this document is clarified.

1.1   Motivation

Since the credit crisis of 2007 the number of mergers, acquisitions, and carve outs have increased (Managersonline, 2011; Vermeulen, 2011). Anyone who follows the media can provide numerous examples of companies that were recently involved in such activities. Three recent examples that made the headlines are the acquisition of Modern.nl by Scheer & Foppen, the merger between ABN-AMRO & Fortis, and the merger of air carriers KLM and Air France. To give an impression of the amount of money that is involved with such transactions, the savings KLM made were up to 660 million Euros in two years' time. Air France-KLM reported over the first half of 2004 net earnings of 296 million versus 189 million Euros over the first half of 2003 after the consolidation of the Air-France group, including KLM (Volkskrant, 2004). The turnover increased from 8.8 billion to 9.5 billion Euros (Volkskrant, 2004). The CEO of KLM stated that through the collaboration the market share has increased and the merger was KLM's entry into the French market that resulted in many extra passengers for the airline company (Elsevier, 2004). Other examples of some large merger and acquisitions that have taken place, are identified in Table 1-1 (Matthes, 2009).

Acquiring Firm	Acquired Firm	Value (Billions of Dollar)	Year
Exxon	Mobil Corp	81.4	1998
SBC Communications	Ameritech Corp	75.2	1998
British Petroleum Co	Amoco	56.5	1998
Vodafone Group	AirTouch Communications	62.8	1999
Pfizer	Warner-Lambert Co	82.4	1999
Glaxo Wellcome	SmithKline Beecham	75.7	2000
Hewlett Packard	Compaq	25.0	2001
Bank of America	Merrill Lynch	50.0	2008

Table 1-1 - Sample of Largest Mergers and Acquisitions by Value (Matthes, 2009)

According to Jemison and Sitkin (1986) and Raghavendra and Vermaelen (1998), mergers and acquisitions prove to be an effective management approach to gain business growth. Lin, Lo, and Yang (2010) study supports that organizations meet in an external global competition and in order to enhance their competitive advantage, "mergers and acquisitions have become one of the competitive strategies for external growth". Other motives for mergers and acquisitions might be gaining market share (Gaughan, 2002), potential synergies (Gullinan, Le Roux, & Weddigen, 2004), learning (Håkanson, 1995) or access to competences (Bresman, Birkinshaw, & Nobel, 1999; Gammelgaard, 2004a, 2004b).

That mergers or acquisitions are everything from easy is illustrated by several researches. PriceWaterhouseCoopers (2004) surveyed 125 companies that recently "completed a merger or acquisition and found that nearly 75 percent of those companies reported problems in integrating their Information Systems". Similar results are from Vestech, an IT due-diligence consultancy company, who states that "both in the United Kingdom and United States 70 percent of all mergers and acquisitions fail to achieve the anticipated results, mainly because of Information Technology problems" (D. Brown, 2001).

An example of an unsuccessful merger is the Lloyds and TSB merger, 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 & Hirschheim, 2004). USA Waste Inc.'s $20 billion acquisition of Waste Management Corp. in 1998 provides a good example of how not to integrate Information Systems. Neither company had an IT system that could service the combined organization. The year after the deal was completed, the entire senior management team was fired, and planned efficiencies were accomplished 18 months to two years later than planned (Shearer, Stern, & Pittman, 2004). On the other hand, the success story of Sallie Mae's acquisition of USA Group was the result of a successful post-merger IT integration (C. Brown, Clancy, & Scholer, 2003). This suggests that IT integration does in fact contribute to the overall success of a merger (Mehta & Hirschheim, 2004).

Mergers and acquisitions not only include the control over human resources, but require complete integration of Information Technology environment (e.g. data integration). In the process of a merger and acquisition, the success or failure of IT integration is often a major factor that determines the success of a merger or acquisition (Batelaan & Veltman, 2002; Giga Information Group, 1999; Lin et al., 2010).

1.2   Problem statement

What makes a merger or acquisition so complex (Robbins & Stylianou, 1999)? Companies reported problems in integrating their Information Technology, which depend on their Information System departments to provide timely and accurate information. Currently IT integration is only considered after a deal is closed, often when the managers are left with the extremely difficult task of integrating two fundamentally different IT environments (Mehta & Hirschheim, 2007; Robbins & Stylianou, 1999; Shearer et al., 2004).

Merger discussions tend to be secret, high level, financially oriented (Haspeslagh & Jemison, 1991) and, in general, do not include Information System professionals (Harrell & Higgins, 2002). This is unfortunate, because the process of quickly integrating systems is extremely complex and the lack of pre-merger IT integration-related planning delays the process. The immediate benefits expected from the merger are often not achieved because of unrealistic expectations relative to IT integration. Another study of McKiernan and Merali (1995), "indicates that only half of the acquirers have complete information about the software and communication system of the acquired entities".

More examples of problems are identified in a research of the Boston Consulting Group (2004). They conclude, "defining a well-structured approach to IT integration can slip far down the priority list, while managers are concerned with implementing new organizational structures, identifying quick wins, and developing the strategy of the new entity". The result can be a scenario of a new IT landscape, consisting of a patchwork of applications that cannot communicate. Additional costs are usually incurred, because of redundant applications, divergent IT technologies, incompatible data structures, ageing or badly documented software, and business projects that cannot be carried out. In such a situation, senior management becomes so frustrated with the resulting inefficiencies that it calls for a complete overhaul of IT systems. This leads of course to further costs, poorly served customers, and increasingly dissatisfied IT users. Therefore, the objective of this thesis project is to provide an answer how to prevent the failure of IT integration and how to increase the (business) value on IT integration, during a merger or acquisition.

1.3   Scientific relevance

IT integration, though, is often given insufficient priority in merger discussions, with the management seemingly focusing more on the strategic and organizational compatibility of the two firms and leaving the IT issue to a later stage (Buck-Lew, Pliskin, Shaked, & Wardle, 1992; Stylianou, Jeffries, & Robbins, 1996). According to D. Brown (2001), meetings of the board of a company "often spend more time considering the new corporate logo than issues surrounding information technology in a merger or acquisition".

Much of the research of mergers and acquisitions has focused on the financial aspects (Johnston & Yetton, 1996), the increase of company market value after merger and acquisitions (Lin et al., 2010), and recognizes the importance of IT integration during mergers (Harrell & Higgins, 2002). IT integration is mentioned as one of the crucial factors for successful mergers (Batelaan & Veltman, 2002; Giga Information Group, 1999).

At best, the literature has focused on "the effects of post-merger systems integration on information systems area capabilities" (Robbins & Stylianou, 1999), the reasons why organizational culture is an important factor in regard to the success rate of merger and acquisitions (Schraeder & Self, 2003), and on a number of practical experiences (Batelaan & Veltman, 2002). Lack of information about IT integration could have consequences for the success of a merger and acquisition. This research aims to find a relation between mergers and acquisitions versus IT integration. Moreover, this research will discuss critical success factors that influence the success of IT integration. The factors are mapped in a framework, based on the different phases during a merger and acquisition and focus areas. Examples of focus areas are business/IT alignment, application and infrastructure. These focus areas are based on a differentiation ranging from Strategy and Imperatives (Business & IT) to following Enterprise Architecture components: Business, Application, Information, Technology, and Security Architecture (Accenture, 2009; Winter & Fischer, 2007).

Improved IT integration could lead to a reduction in merger and acquisition failure. Therefore, this research contributes to the scientific knowledge by developing a framework, which can provide guidance to the IT integration process during a merger or acquisition.

1.4   Social relevance

In a merger or acquisition, it is of great importance to align business and IT. The operations of the merged organizations will be better performed with a successful integration of IT. Indeed, the business processes of both parties will be as streamlined as possible, which provides benefits for the future.

The result of this research can assist organizations to be well prepared for IT integration in mergers and acquisitions by providing an overview of critical success factors in a framework. With the increase of mergers and acquisitions after the last financial crisis of 2007, more and more organizations will therefore ask for better executing their integration of Information Technology. Improved IT integration could help the acquiring and acquired company to enable the combined business process at an earlier stage after the merger and acquisition transaction has taken place. Moreover, the result will support organizations to achieve the immediate benefits expected from the merger or acquisition.

1.5   Research objective and questions

The objective of this thesis is to provide an answer how to prevent the failure of IT integration and how to increase the (business) value on IT integration, during a merger or acquisition. This thesis aims to find critical success factors that influence to IT integration and combine these in a framework. For a structural execution of the thesis project, the main research question and the steps are translated into two three sub-research questions. By answering these sub-research questions, an answer to the main question is provided.

Main research question:

> *What are during a merger or acquisition key factors for the successful integration of Information Technology?*

There are three sub-research questions, which should be answered, before a proper answer to the main question can be provided. The sub-research questions are:

> *RQ1   What is the current scientific knowledge about mergers and acquisitions, IT integration and the relation between them?*
>
> *RQ2   What factors influence the success of IT integration, during a merger or acquisition?*
>
> > *a.   For each phase of the merger and acquisition process, what factors influence the success of IT integration?*
> >
> > *b.   For each focus area, e.g. data, applications, infrastructure, what factors influence the success of IT integration?*
>
> *RQ3   How can key factors influence the success of IT integration?*

These sub-research questions are logically dependent on each other. The first linkage lies in the assumption that, in order to find the factors that prevent IT integration from succeeding during a merger or acquisition, an understanding of the definition of a merger and acquisitions and IT integration is needed. The second linkage lies in the assumption that improved IT integration could lead to a reduction in merger and acquisition failure.

1.6 Thesis structure

The structure of this thesis is divided into four parts, as depicted in Figure 1. Part I consist of two chapters and cover the introduction of this research. The aim of chapter 1 is to highlight the context and objective of this research. The context includes the motivation to start with the research, the practical and scientific relevance, and the research objectives and questions. Chapter 2 elaborates on the selected research methods to perform the overall process of this research. These methodologies are Design Research and Qualitative Research. Chapter 2 elaborates also on the interviews, which comprise an approach and discussion guide as well as details about the interviewees.

Part II incorporate chapter 3, which is devoted to the theoretical foundation of the study. This chapter covers the theoretical foundation of the research and is divided into research on mergers and acquisitions and research on IT integration. Chapter 3 will answer the first sub-research question (RQ1) by discussing existing theory on mergers, acquisitions, and IT integration as well as presenting a graphical overview that contains relevant theories for this thesis. Furthermore, the relation between mergers and acquisitions and IT integration will be discussed as well in chapter 3.

Chapter 4, 5 and 6 (Part III) cover the results from the interviews, answering sub-research question RQ2 and RQ3. Chapter 4 discusses the current literature on the activities on mergers and acquisition and shows which focus areas are relevant for the IT integration framework. Chapter 5 presents the identified and validated critical success factors that could affect the success of IT integration during mergers and acquisitions, thereby answering RQ2. Chapter 6 will answer RQ3, which elaborates on how the identified key factors influence the success of IT integration, based on four performance indicators.

Part IV incorporates chapter 7, 8, and 9, which sums up research findings to provide an answer on the main research question and discusses limitations and problems encountered during the study as well as proposes future research needs.
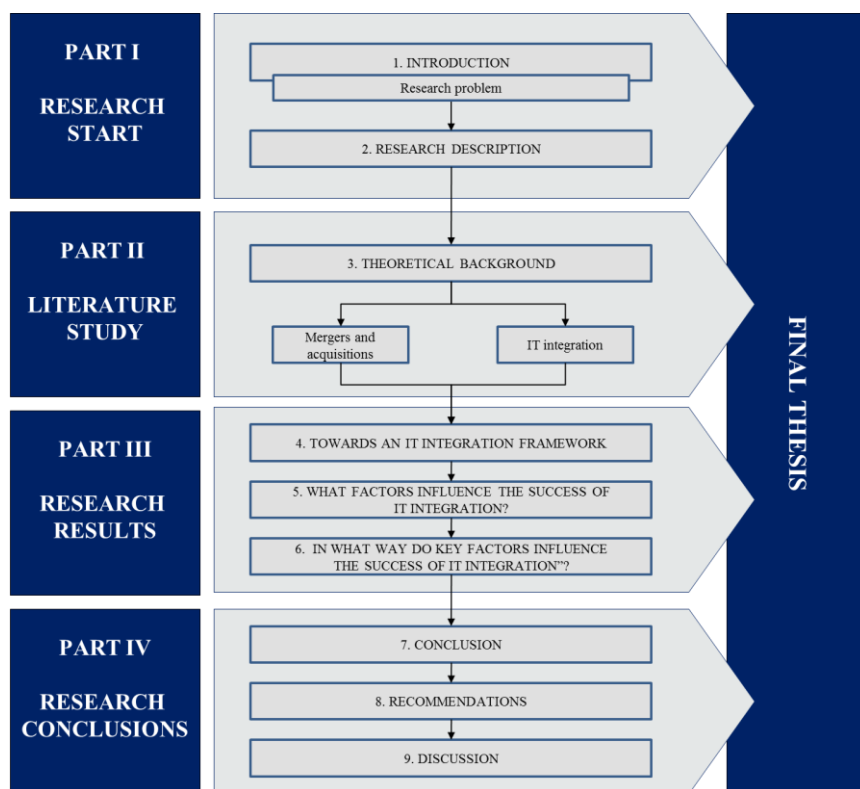
Figure 1 - Document structure

RESEARCH DESCRIPTION

2 RESEARCH DESCRIPTION

The methodology of this thesis project will be described, which is used to answer the sub-research questions. For this thesis project, the types of research are qualitative- and secondary research. In the first section of this chapter, design research will be discussed. Secondary research will be discussed in the second section, which will be performed in the form of an extensive literature study from different available sources such as journals, books, conferences, and magazines. Qualitative research will be discussed in the third section, with the emphasis on semi-structured interviews.

2.1 Design research

With the problem statement and research questions in mind, this thesis project can be classified as an explorative research (Stebbins, 2001). As discussed in the previous chapter, the main objective of this research is to develop a framework that depicts key factors influencing the success of IT integration during mergers and acquisitions. This framework can be used to support organizations with integrating their IT, in order to increase the (business) value of the merged organization.

For this purpose, a design research approach is used as depicted in Figure 2, because of its main philosophy to create and evaluate knowledge, which supports solving identifiable organizational problems, by means of constructing an artefact (Hevner, March, Park, & Ram, 2004; Vaishnavi & Kuechler, 2004). In this research the main artefact is the IT integration framework, which is developed according to the following steps in developing design research artefacts, as described by Vaishnavi and Kuechler (2004):

1. Problem awareness (Chapter 1 t/m 3)

2. Suggestion and development (Chapter 4)

3. Evaluation (Chapter 5 & 6)

4. Conclusion (Chapter 7 t/m 9)
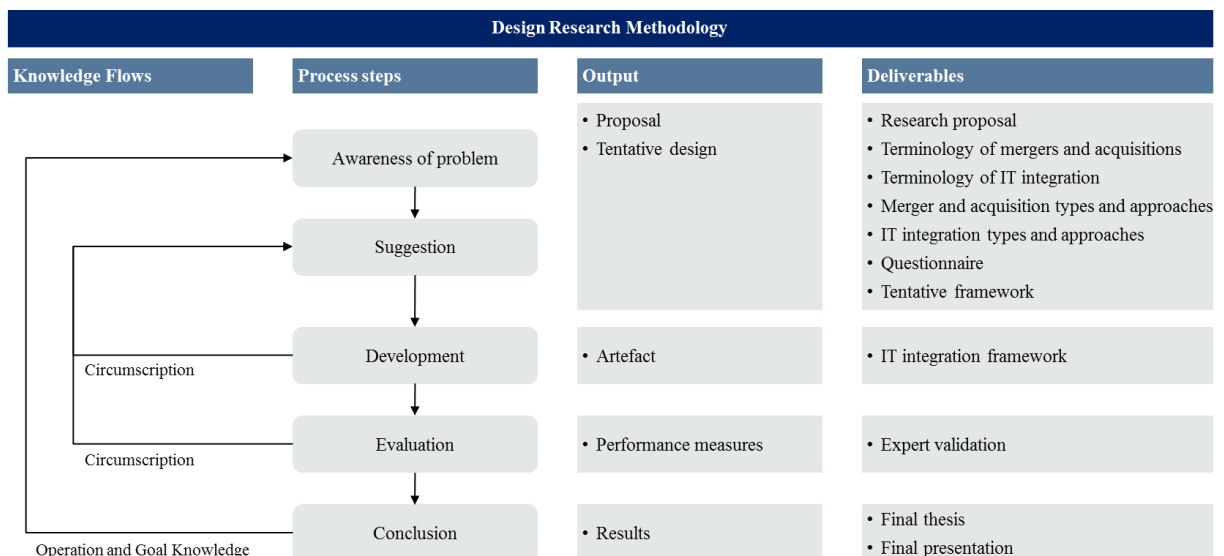
Figure 2 - Design Research Methodology, adopted from Vaishnavi and Kuechler (2004)

The first step, *problem awareness* was raised in literature and business press reporting on IT integration success during mergers and acquisitions, and in conversations with practitioners from the field. The second step, *suggestion* is an exploratory phase to gain further insight into the problem, informed by earlier research literature on related topics. The design of the artefact according to the suggested solution, or tentative design, is performed in the *development* step. The factors identified and the framework has been *evaluated* within 11 interviews, following the appropriate criteria for trustworthiness in qualitative research of Lincoln and Guba (1985). Moreover, in order to receive feedback and a better understanding of the problem, both the quality of the product and the design process is improved. This is iterated a number of times (see the circumscription arrow), before the final design artefact is generated. The final step, the *conclusion* becomes the goal knowledge to answer the identified problems in the beginning of the research (Kuechler, Vaishnavi, & Petter, 2005).

2.2 Secondary research

Secondary research is defined by Stanton, Etzel, and Walker (1994) as "the research for available data already gathered for some other purpose". Secondary research will be performed in the form of a literature study.

2.2.1 Literature study

To provide the reader with a fundamental understanding of the subjects involved in this thesis project, a theoretical background will be presented of mergers and acquisitions as well an explanation of IT integration. To investigate all the factors, which influence the success of IT integration, a thorough literature research is required to refine the categorization of these factors in a framework. Mouton (2001) states that the purpose of a literature study is to establish what has been done in the field of the study. The information for this study will be gathered from the primary, secondary, tertiary, and grey literature (Schembri, 2007). The first category of literature is primary literature, which consists of monographs, journals, theses, reports, and conference papers. Secondary literature includes review monographic books journals, manuals, handbooks, and textbooks. Tertiary literature embraces newsletters, science articles in newspapers, science magazines, encyclopedias, and introductory textbooks. The last category of literature consists of literature that is not published and distributed in the usual manner.

2.3 Qualitative research

Because available literature is limited on the subject of IT integration during mergers and acquisitions, exploring and having good understanding about the topic becomes essential. With regard to this issue, qualitative approach will be the best methodology to perform. Qualitative research has its roots in the social science, which is more concerned with studying the social reality of individuals, groups, and cultures and to help researchers to understand them in a rich sense. Holloway (1997) defines qualitative research as "a form of social inquiry that focuses on the way people interpret and make sense of their experiences and the world in which they live". The aim of this research is to contribute to the knowledge by developing a framework for guiding IT integration during a merger or acquisition. It will provide an answer how to prevent the failure of IT integration and how to increase the (business) value on IT integration, during a merger or acquisition. The type of qualitative research used is semi-structured interviews.

2.3.1 Interviews

"An interview is regarded as a situation of knowledge creation between the views of the two parties in a conversation" (Kvale, 1996). Interviews were conducted to learn about the phases, focus areas and gather input for the framework as well as to validate this framework. A semi-structured interviewing technique was selected, which allows receiving answers on pre-defined questions and anticipating on new insights and discussing them with the interviewees. According to Kvale (1996), semi-structured interviews are interviews that have a relatively flexible questionnaire design that also allow emerging them during the interview. According to Van den Akker (1999), it is quite common to use expert interviews in design science.

Since semi-structured interviews were used in this research as a data collection technique, there are several potential pitfalls or issues that have to be kept in mind. A structured preparation preceded the interviews to avoid these issues from happening. These preparations are explained in more detail below, which includes a selection procedure for the subject matter experts, an interview protocol, a discussion guide, and a data analysis strategy.

2.3.1.1 Interviewees

There were 11 applicable subject matter experts selected for the interviews who are experienced and knowledgeable in the field of IT integration during a merger or acquisition. These experts work as (senior) managers and senior executives in management and technology consulting. Although all experts work in consultancy, the heterogeneity of their background and the industries they have worked in ensures there are differences in their experiences and views on IT integration during mergers and acquisitions.

Based on the experience of the experts, they were divided into two groups. The first group consists of 6 subject matter experts aimed at validating the IT integration framework and identifying critical success factors during IT integration in mergers and acquisitions. These identified critical success factors were discussed per phase and focus area. The remaining 5 subject matter experts formed the second group aimed at validating and ranking the identified critical success factors as well as the validation of the mapping of these factors in the IT integration framework. Moreover, the interviewee was asked how each factor is related to performance indicators time, quality, cost, and business value. Appendix A1 outlines the names of the 6 interviewees and Appendix A2 outlines the names of the 5 interviewees, the function level they have, the industry they are working in, and the years of relevant work experience.

2.3.1.2 Protocol

An introduction was sent by e-mail from the external supervisor to the subject matter experts. This e-mail (Appendix A3) contains an introduction of the researcher, the objective of the interview, and to ask the interviewee to make some time available to schedule an interview. Afterwards, the interviewees were contacted by email (Appendix A4) and/or by phone to ask if they were willing to cooperate in this research. During this conversation, an interview was scheduled for one hour.

After the interview was scheduled, a confirmation e-mail was sent to the interviewee that included the commitments made during the conversation and the purpose of the interview. In agreement with the interviewees all the interviews were audio recorded for reporting purposes. The interviewer guaranteed their anonymity to ensure that the interviewees are not affected by the fact that the interviews are recorded and that they still provide their honest opinions.

Once an interview was finished, the results were processed immediately. A copy of this transcription was sent to the interviewee so that he or she can verify if the findings correspond with what was said during the interview. All interviews were conducted by the researcher who has no self interest in the answers given and has an objective point of view. With the exception of one interviewee (expert 1) in the second group all the interviews were performed in Dutch, because all the interviewees were native Dutch speaking persons. The nationality of expert 1 is Italian; this interview was conducted during a conference call in English.

2.3.1.3 Discussion guide

For consistency purposes, a structure was designed that logically steers the thinking of the interviewees to a place where they are able to answer the questions in a more holistic way. This structure, referred as discussion guide, included questions which are based on the topics and areas covered in the literature review. The complete discussion guide, including the interview questions is enclosed in Appendix A5. The discussion guide is described below, based on Henning (2005).

Background of the interviewee

To confirm the applicability of the experts, they were asked about their experience with mergers and acquisitions projects, IT integration as well as the different phases. This part established an insight about the experts' knowledge and experience on the subject. Furthermore, it gives the interviewer and interviewee the chance to establish a good relationship, and it gives the expert the opportunity to describe the domain in ways he is familiar with (Schreiber et al., 2000).

Agreement on the definitions 'merger and acquisition project', 'IT integration', 'IT integration success', and 'critical success factor'.

The questions in this part were included, because critical success factors are not univocal for all project types (Shokri-Ghasabeh & Kavousi-Chabok, 2009). For example, the discussion about critical success factors can be traced back to 1961, where Daniel (1961) first discussed "success factors" in management literature. Therefore, the agreement on the definitions has to reduce confusion of tongues that will negatively affect the research data.

Identification and validation of critical success factors that affects success of IT integration during mergers and acquisitions

This part embraces the main goal of the interviews and is used to validate the IT integration framework, to identify critical success factors, including the mapping of the factor in the IT integration framework. The interviewee was first asked to validate the IT integration framework and secondly to provide critical success factors. In the second interview group, the interviewee was asked to validate each identified critical success factor and secondly to rank these critical success factors based on the degree of importance and the level of criticality. In addition, the interviewee was asked how each factor is related to performance indicators time, quality, cost, and business value. In both situations, the interviewer used his notes and the audio recording to create a transcript of each interview.

Closing

The closing part was used to announce the end of the interview and to provide opportunity for questions from the side of the interviewee. Furthermore, the procedure for processing the data was repeated (i.e. it was explained that a transcription of the interview would be sent towards the interviewee which they could check), the interviewee was thanked for his cooperation, and the interviewee was asked for feedback.

When devising the questions it is important to ensure that each key term is consistently understood by the interviewees (Fowler, 1992). When there is no procedure that enforces this and terms are unclear, systematic errors will occur when analyzing the data (Fowler, 1992). Therefore, all the questions in the discussion guide were finalized after they were tested in two test interviews; this procedure is referred to as pre-testing (Fowler, 1992). In addition to this pre-testing procedure, some of the important definitions were elaborated at the beginning of each interview (see agreement on definitions part).

2.3.2   Interview approach

After scheduling the interview, one-on-one interviews are conducted with experts who can provide valuable insights. This way, positive and negative personal experiences can be shared while not being hindered by others interviewees who might make it uncomfortable to freely speak about certain topics. The interviews are face-to-face and follow semi-structured formats with predefined key topics to identify critical success factors. During these interviews, PowerPoint slides are used with the aim to assist the researcher (Appendix A6 and Appendix A7).

In order to verify whether the constructed framework really is of use in mergers and acquisitions, a validation process was performed for the IT integration framework. Furthermore, the factors found needed to be validated. The validation was done by interviews with experts, making up the second group of interviews in this research. By using the Delphi method (Linstone & Turoff, 1975) for the validation process, the IT integration framework was adapted and verified so that the interviewed experts agreed on the contents of the framework. These experts were all different from the first group.

2.3.2.1 Data analysis process

For the analytical process, the three major phases of the framework of Miles and Huberman (1994) were used to serve as a basis. This basis was expanded with a step from the analytical technique of LeCompte (2000). The phases in Miles and Huberman (1994) framework are: data reduction, data display, and conclusion drawing and verification. Before the data reduction can take place, LeCompte (2000) recommends a tidying up phase.

Tidying up

A first step would be creating and reading of the transcripts, reviewing the notes from the observations and additional documentation. Moreover, before even creating a transcript, listening to interview recordings could establish confirmation of the notes.

All the interviews were audio recorded and transcribed in Microsoft Word by the researcher. These transcriptions are based on the notes and recorded interviews. As a preparation, the created files were all numbered and ordered based on their creation date and stored in a map in the researcher's computer. Furthermore, the selected data were compared to the sub-research questions to identify if there were holes or missing data that were necessary to answer these questions. There were no gaps found that needed to be filled, so the researcher did not have to return to the field to collect any additional data.

Data reduction

The abundant data collected through the interviews needs to be reduced to extract the relevant information that is relevant for the research. It is important to reduce the data into categories (Miles & Huberman, 1994). Data reduction is the first phase of the framework of Miles and Huberman (1994), which is concerned with "the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written up field notes or transcriptions". Coding is a big part of this phase, which has two simultaneous activities namely data reduction and the analytic categorization of data (Neuman, 1997). A lot of raw data is organized into manageable parts that are useful for analysis by using codes. A sentence or phrase is meaningful when it could be of any value for answering the (sub) research questions. This process was repeated until all the data was properly reduced. To provide an example of this categorization of data, "support of key stakeholders" or "create support from top management" were categorized under the critical success factor "engagement of key stakeholders and establish strong leadership to support the merger integration".

The marking, coding, labeling, and moving of data segments were supported by the computer program MAXQDA10. MAXQDA10 "supports all individuals performing qualitative data analysis and helps to systematically evaluate and interpret texts" and "is used in a wide range of academic and non-academic disciplines" (MAXQDA, 2011). With the support of such a program the data reduction phase can be done more quickly and efficiently than can be done manually (Frechtling & Sharp, 1997).

Data display

Data display is the second phase of the data analysis process. Miles and Huberman (1994) define "data display as "an organized, compressed assembly of information that permits conclusion drawing and action". This phase supports to retrieve easily the categorized data rather than reviewing all raw data to gain insights again. Many ways exist to display the data, including diagrams, graphs, tables, and networks. The used display types in this research are tables and a matrix.

The table is used to display how key factors can be influenced on performance indicators time, quality, cost, and business value. In chapter 6, the table used for this data display is depicted. The matrix is used to display each of the critical success factors mentioned by the interviewees. In Appendix D, the matrix used for this data display is depicted.

Conclusion drawing and verification

The third activity of the analytical process is conclusion drawing and verification. According to Frechtling and Sharp (1997), "conclusion drawing involves stepping back to consider what the analyzed data mean and to assess implications for the question at hand". The conclusion will be drawn on the identified factors that are scored as most important for each of the four phases. The conclusions needed to be verified, which entails revisiting the data as many times as necessary to cross-check or verify these emergent conclusions. Verification "entails revisiting the data as many times as necessary to cross-check or verifies these emergent conclusions" (Frechtling & Sharp, 1997). These steps are all done in accordance with the four issues that realize trustworthy conclusions from qualitative research: credibility, transferability, dependability and conformability. According to Lincoln and Guba (1985), credibility can be referred as internal validity, transferability as external validity, dependability as reliability, and conformability as objectivity in quantitative research.
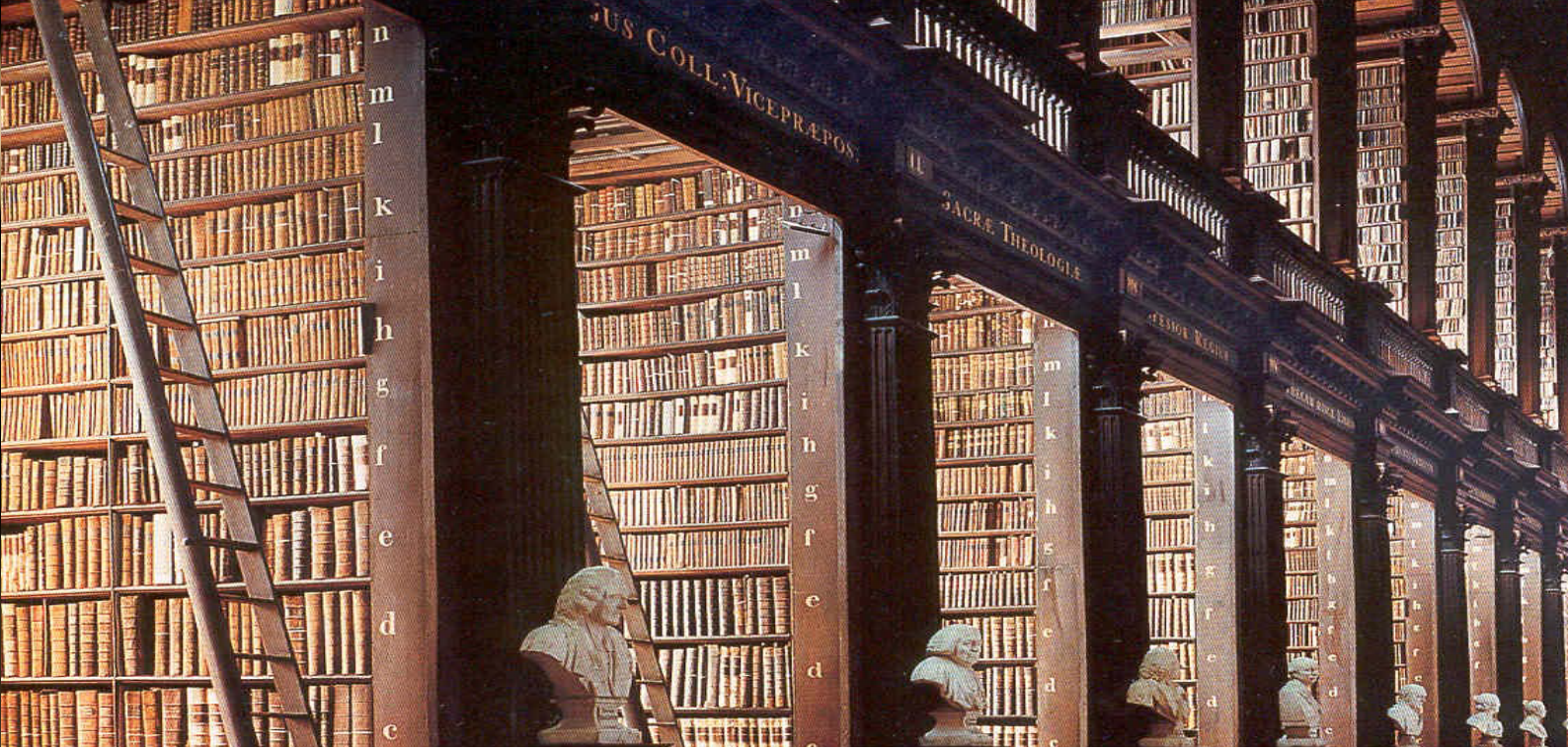
THEORETICAL
BACKGROUND

3 THEORETICAL BACKGROUND

The main goal of this chapter is to provide the reader with an introduction to the field of IT integration during mergers and acquisitions. The first section of this chapter provides an explanation on mergers and acquisitions. The second section provides an understanding of the subject IT integration. The third section discussing the role of IT integration during mergers and acquisitions. The fourth section describes the relation of mergers and acquisitions and IT integration, in order to provide an answer to the first sub-research question.

3.1 Mergers and acquisitions

To effectively discuss mergers and acquisitions from an IT perspective and to view this subject as one that is relevant to today's IT environment, one must first have a clear understanding of these concepts. For example, what is meant by the terminology of mergers and acquisitions, how can mergers and acquisitions be categorized, and which integration approaches can be distinguished.

To avoid confusion about the terminology of a merger and an acquisition, definitions of these concepts will be discussed in the first subsection. Based on these definitions and their building blocks, a new definition of a merger and an acquisition will be presented. Different types and approaches of mergers and acquisitions will be discussed in subsection 3.1.2 and 3.1.3. It is important to place emphasis at these different types of mergers and acquisitions, because each type requires different approaches in order to integrate the involved organizations in some way. For example, in horizontal mergers, the objective may be to create one business unit from many units, which logically needs a different set of requirements on the target IT and the process of integrating IT. When taking all the strategic objectives of mergers and acquisitions into account, there are six different types of mergers and acquisitions. Subsection 3.1.3 will address the categorization of four approaches regarding integration of organizations.

3.1.1 Terminology of mergers and acquisitions

The terms 'merger' and 'acquisition' are often used interchangeably in literature (Carrillo, 1998). Also the combined term 'mergers and acquisitions' and its abbreviation 'M&A' are frequently used. These terms denote two separate corporate activities; however, mergers and acquisitions have different meanings in practice. Therefore, it is important to make a distinction between mergers and acquisitions (Singh & Montgomery, 1987).

A merger and an acquisition can be distinguished by the level of equality between the merging partners (Wijnhoven, Spil, Stegwee, & Tjang a Fa, 2006). It involves equal (merger) or non-equal (acquisition) parties in terms of their size and power (C. V. Brown & Renwick, 1996). As in Table 3-1 can be seen, there are many definitions concerning a merger. Derived from these definitions, a merger, as the word implies, always refers to the combination of (at least) two organizations into one new entity.

To provide an overview of the different definitions concerning a merger, these are listed below in Table 3-1.

Author(s)	Definition
Krekel, Van der Woerd, and Wouterse (1969)	"A merger suggests a neutral combination of two objects. Mergers typically involve companies of equal size".
Borys and Jemison (1989)	"Mergers are commonly characterized as the consolidation of two organizations into a single organization".
Giacomazzi, Panella, Pernici, and Sansoni (1997)	"Merger realizes a combination between two or more companies by crossing their stocks, and thus concentrating on all the components of the companies involved in the operation of only one company".
European Central Bank (2000)	"Two or more companies joining together. The new entity can be at holding level or at company level. A merger is recorded on the date of the economic decision (formally agreed) even if the legal issues have not been fully finalized. If subsequent disputes, legal issues or a lack of supervisory approval were to interfere with a completion of the merger, it is held not to have been recorded".
Javidan, Pablo, Singh, Hitt, and Jemison (2004)	"A merger is a process of the integration of the available assets, cultural values, products and services, operations, technology, key employees, and management practices of two separate organizations to form a new entity".
Leeamornsiri (2005)	"A merger generally refers to the mutually accepted incorporation and willing collaboration of two organizations on a fairly equal basis across different businesses and industries".
Jagersma (2005)	"Mergers are the result of the amalgamation of two equal companies, which is realized with the consent of both parties".

Table 3-1 - Definitions of a merger

With due observance of the above definitions, this research draws upon the definitions of Borys and Jemison (1989), Giacomazzi et al. (1997), European Central Bank (2000), and Jagersma (2005) through using key building blocks in order to define a merger. Although Jagersma (2005) discusses a merger of two equal organizations, a merger is defined in this research as:

> *A merger is a combination of two or more organizations into a single new entity, in agreement of all parties involved.*

Nakamura (2005) explains that using a broad definition of a merger and an acquisition could lead to confusion and misunderstanding as it entails everything from pure mergers to strategic alliance. A few definitions provided in the table above are not full appropriate in this research to define a merger. For instance, the definition of Javidan et al. (2004) is about the process of a merger. Moreover, some above definitions of a merger use vague vocabulary, such as 'suggests' in the definition of Krekel et al. (1969) and 'generally' in the definition of Leeamornsiri (2005).

As the same applies for the definition of a merger, several definitions concerning an acquisition are listed in Table 3-2.

Author(s)	Definition
Borys and Jemison (1989)	"The purchase of one organization from another where the buyer or acquirer maintains control".
European Central Bank (2000)	"A company buying shares in another company to achieve a managerial influence".
Jagersma (2005)	"Acquisitions are the results of the combination of two companies of different qualities, not necessarily by mutual agreement".

Table 3-2 - Definitions of an acquisition

From the definitions in Table 3-2 can be gathered that an acquisition suggests the takeover of one organization, the target, by another organization (the acquiring organization). As mentioned earlier, using a broad definition of a merger and an acquisition could lead to confusion and misunderstanding. Therefore, this research draws upon the definitions Borys and Jemison (1989), European Central Bank (2000), and Jagersma (2005) through using key building blocks in order to define an acquisition in a narrow sense as follows:

> *An acquisition is the result of the purchase of another organization, where the buyer or acquirer maintains control.*

Many researchers choose to study the variations of mergers and acquisitions as one single phenomenon (Granlund, 2003; S. Henningsson, 2008; Mehta & Hirschheim, 2004; Wijnhoven et al., 2006). Therefore, in this research, the combined term "mergers and acquisitions" will be used. After facilitating the reader an explanation of the meanings and use of key concepts that are used in this thesis, the next subsection will elaborate on the different types of a merger and acquisition.

3.1.2 Mergers and acquisitions types

As mentioned earlier in section 3.1, mergers and acquisitions can be categorized using a typology, which requires different approaches in order to integrate two organizations. Although the terminologies of a merger and acquisition differ, the framework of United States Federal Trade Commission (1975) classifies mergers and acquisitions into horizontal, vertical, product concentric, market concentric, and conglomerate categories. This classification is based on relations of products and markets of the merging companies. Larsson (1990) made an effort on the framework of the typology of the Federal Trade Commission (1975). In the framework of Larsson (1990), the category "vertical" is split into two categories: vertical backward and vertical forward, as shown in Figure 3.

An explanation will be provided of the concepts in the framework from different scholars. As can been seen in the framework below, mergers and acquisitions can be categorized in terms of the companies' products relation and the market relation.

The first dimension is *production relation*, where the place in a value chain of industry determines whether the merger and acquisition is same, long-linked, or unrelated. *Same* means that the production relation can be either overlapping/similar or somewhat connected (Larsson, 1990). The *long-linked* relation includes inserting either a vertical backward merger and acquisition where the same customer markets are maintained or a vertical forward merger and acquisition to new customer markets (Larsson, 1990). *Unrelated* means that the two organizations operate in different value chains (S. Henningsson, 2008). The second dimension in the framework is *market relation*, which means that mergers and acquisitions have *similar* production, but in *different* markets (Larsson, 1990).

| | | Market relation | |
		Same	Different
Production relation	Same	*Horizontal*	*Market extension*
	Long-linked	*Vertical backward*	*Vertical forward*
	Unrelated	*Product extension*	*Conglomerate*

Figure 3 - A systematic framework for the typology of mergers and acquisitions, adopted from Larsson (1990)

As stated earlier in this section, six different types of mergers and acquisitions can be distinguished. According to Buono and Bowditch (1989), *horizontal* means the combining companies are potential competitors, which produce or deliver one or more closely related products or services to the same market. Giacomazzi et al. (1997) defines horizontal "as the aim of the transaction is to increase the dimensions in the market". A more recent definition of a horizontal merger is provided by Miklitz and Buxmann (2007) as "a transaction between two companies of the same industrial sector which operate on the same level of the supply chain". The category *market extension* means that companies produce the same products for different geographical markets (Elgers & Clark, 1980).

Vertical backward and vertical forward belongs to long-linked in the framework of Larsson (1990). "A company exhibits *backward vertical* when it controls subsidiaries that produce some of the inputs used in the production of its products" (Pirone, 2010). Contrary to vertical backward, "a company tends towards *forward vertical* integration when it controls distribution centers and retailers where its products are sold" (Pirone, 2010).

The unrelated *product extension* means that the two companies are active in different value chains (S. Henningsson, 2008). Organizations in *conglomerate* mergers and acquisitions do not operate in the same business industry at all (Puljic, 2006). A similar definition of a conglomerate merger is provided by Miklitz and Buxmann (2007). They denominate a conglomerate merger as "an amalgamation of companies from different industrial sectors" (Miklitz & Buxmann, 2007).

Based on the relationship of the organizations, a number of classifications of different merger and acquisitions types exist, of which the systematic framework of Larsson (1990) is most cited (S. Henningsson, 2008; S. Henningsson & Carlsson, 2011; Norén & Jönsson, 2005; Risberg, 1999). Therefore, this research will apply the classification of mergers and acquisitions of Larsson (1990).

3.1.3   Mergers and acquisitions approaches

In order to actually receive the potential benefits of a merger and acquisition, the involved organizations must be integrated. Through the literature review, organizational integration in mergers and acquisitions are categorized into four approaches, which describe the desired level of integration of the two organizations.

According to Haspeslagh and Jemison (1991), mergers and acquisitions can be characterized into four approaches: holding, preservation, symbiosis, and absorption. They state that mergers may differ on two dimensions (Figure 4). The first dimension, the *need for strategic interdependence*, is the manner in which value is expected to be created (Haspeslagh & Jemison, 1991). The second dimension, the *need for organizational autonomy*, is the extent to which the strategic capabilities of the acquired company need to be preserved (Haspeslagh & Jemison, 1991). In a study by these two researchers, four approaches can be distinguished, which will be discussed below.

	Need for strategic interdependence	
High	*Preservation*	*Symbiosis*
Low	*Holding*	*Absorption*
	Low	High

Need for organizational autonomy

Figure 4 - Integration typology, adopted from Haspeslagh and Jemison (1991)

The first approach, *holding*, represents an approach where the acquired company is left undisturbed (S. Henningsson, 2008). This approach is not really seen as an integration approach by any of the authors, since it involves very little of integration activity. In the second approach, *preservation,* the capabilities of the acquired company will be maintained (Wijnhoven et al., 2006). The third approach, *symbiosis*, refers to "a situation where the acquirer and acquired are equally transformed to fit each other" (S. Henningsson & Carlsson, 2006). The fourth approach, *absorption*, is the complete incorporation of an acquired organization into the acquiring organization (S. Henningsson, 2008). Such mergers are specifically made to achieve benefits of scale and to increase market share (Wijnhoven et al., 2006). Examples of absorptions are those between Akzo and Nobel Industries into AkzoNobel and between ABN (Algemene Nederlandse Bank) and AMRO (AMsterdam ROtterdam) bank into ABN AMRO. Such mergers are often recognized by maintaining of the name of both organizations (Van Kessel, 2007).

The approaches from Haspeslagh and Jemison (1991) can be compared to the approaches of Napier (1989), who states four approaches: extension, exchange collaboration, synergy collaboration, and redesign. These approaches are placed next to each other in Table 3-3 from a low to a high level of integration. In this table the amount of integration is pictured, starting from no integration whatsoever, representing a complete hands-off, to a 'redesign' integration (Dudas & Tobisson, 2007).

Amount of integration   **Low** ——————————————————————————▶ **High**

Napier (1989)	Extension	Exchange collaboration	Synergy collaboration	Redesign
Haspeslagh and Jemison (1991)	Holding	Preservation	Symbiosis	Absorption

Table 3-3 - Integration theories, adopted from Dudas and Tobisson (2007)

As mentioned in the introduction of this section, organizational integration in mergers and acquisitions can be categorized into four approaches. According to Dudas and Tobisson (2007), S. Henningsson (2008), S. Henningsson and Carlsson (2011), McKiernan and Merali (1993); McKiernan and Merali (1995), and Wijnhoven et al. (2006) the integration typology from Haspeslagh and Jemison (1991) is the most frequently used approach in scientific literature. Therefore, this research will apply the typology of Haspeslagh and Jemison (1991).

3.2 IT integration

The main goal of this section is to provide an understanding of IT integration. The first subsection provides a definition of IT integration. Additionally, three different types of integrating IT will be discussed in the second subsection. It is important to consider different types of IT integration when an organization decides to acquire or to merge with another organization, because a major question for an organization is to what extent to integrate the two IT environments. These three IT integration types are related to four different IT integration approaches. In the third section, these four IT integration approaches will be discussed.

3.2.1 Terminology of IT integration

In literature, there is a list of terms that refers to some kind of Information Systems or Information Technology related integration, which can be extended almost infinitely. Information System integration, Enterprise Integration, Enterprise Systems Integration, and Enterprise Resource Planning Integration are just a part of a flora of terms. To avoid confusion of these notions, an attempt is made here to clarify how IT integration is being used in literature.

Information Technology (IT) is a wide and heterogeneous field, it "refers broadly to the technology of computers and electronic communications as applied to processing, transfer, and storage of information" (Peterhans, 1997). IT can be further divided in hardware and software. This is assimilated into the definition of the Information Technology Association of America (2008). They define IT as "the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware". This definition also shows the connection of IT with an Information System namely, that IT is a part of an Information System.

Surprisingly, very little literature directly defines the term *integration* (Schweiger & Goulet, 2000). Some researchers (Haspeslagh & Jemison, 1991; Napier, 1989) have offered frameworks to identify different types of integration. Mehta and Hirschheim (2004), Schweiger and Goulet (2000), and Shrivastava (1986) defines integration as "blending together of organizational components, including IT components such as infrastructure, processes, applications, people (skills) and culture". However, this definition describes integration not from a merger and acquisition perspective. From their definition of integration, this research adapted the term *integration* as: blending together of organizational components, including IT components such as infrastructure, processes, applications, people (skills), and culture (Mehta & Hirschheim, 2004; Schweiger & Goulet, 2000; Shrivastava, 1986), with the objective that two entities that were merged will work in the same way. This definition describes organization's components and IT components (infrastructure, applications) as well as merging of two entities that will work in the same way.

3.2.2 IT integration types

Different types of mergers and acquisitions have been discussed earlier in this section. Regarding IT integration, literature considers three different IT integration types: complete IT integration, partial IT integration, and IT co-existence (Giacomazzi et al., 1997; Johnston & Yetton, 1996; Wijnhoven et al., 2006). For each of these three IT integration types, a short description will be provided including with their relations to the four merger and acquisition approaches as discussed in 3.1.3.

The first IT integration type is *complete IT integration*, which is "the most ambitious objective in IT integration" (Wijnhoven et al., 2006). Two separate IT environments are merged, which can be completely infeasible in large and decentralized organizations, but may be an option in smaller organizations. Complete IT integration is related to approach 'absorption', because "this approach requires complete integration of the operations, IT, organization and culture" (Wijnhoven et al., 2006).

Partial IT integration is the second type with the aim to establish priorities. The most important business processes and Information Systems will be integrated first, after that the remainder is left to a later period. Partial IT integration is related to the approach 'symbiosis'. In this approach the business processes in each organization that contribute to the strategic objective of the merger are left intact and business processes that are similar are combined to reduce redundancy (Wijnhoven et al., 2006).

The third type is *IT co-existence*, which maintains separate IT environments of the merged organizations. In this type, only bridges for data exchange and consolidation are necessary. Maintaining and bridging two redundant systems results in high cost, which is not desirable to achieve synergies. IT co-existence is related to the approach 'preservation', because the operations remain autonomous, no integration occurs (Wijnhoven et al., 2006).

As mentioned earlier, holding is not really seen as an integration category by any of the authors, since it involves very little of integration activity (S. Henningsson, 2008). Therefore, this approach is not related to an IT integration type. In subsection 3.1.3, four merger and acquisition approaches are discussed. Table 3-4 provides an overview which IT integration types correspond with which merger and acquisition approach.

Merger and acquisition approaches	IT integration types
Absorption	Complete IT integration
Symbiosis	Partial IT integration
Preservation	IT co-existence
Holding	-

Table 3-4 - Merger and acquisition approaches related to IT integration types (Wijnhoven et al., 2006)

3.2.3   IT integration approaches

Depending on the above types for IT integration, four IT integration approaches are possible: renewal, take-over, standardization, and synchronization (Harrell & Higgins, 2002; Wijnhoven et al., 2006). For each of these four approaches, a short description will be provided included with their relation to the three IT integration types above.

Renewal, the first approach, is the replacement of all IT components of both merged organizations by an entirely new IT environment. According to Batelaan and Veltman (2002), this approach is often not very practical due to the available time and the definition of the necessary IT environment in a merged process can create political strains. Managers may still opt to convert a completely new IT environment if neither of the merging organizations possesses an IT environment with the capability to support the new company. For example, merged organizations that do not already use Enterprise Resource Planning (ERP) systems may especially find it economically feasible to adopt a single system that can be used for the entire merged organization. This approach requires that the IT workforce must be trained in maintaining the new system and all current operations of the systems must be converted to a new system (Wijnhoven et al., 2006).

Take-over, the second approach, involves using the IT environment of one of the merging organizations as the new system of the newly formed organization (Harrell & Higgins, 2002; Wijnhoven et al., 2006). Problems can easily arise in this approach because the chosen system may lack functions that are crucial in the new processes, which requires some adjustments of functionalities to meet the new situation. These problems vary from the conversion of other the organization's data to the cost of acquiring new hardware. Each of these problems can influence budget and synergies associated with the merger (Harrell & Higgins, 2002; Wijnhoven et al., 2006). According to Batelaan and Veltman (2002), a precondition for effective take-over is the scalability of the selected system.

The third approach, *standardization*, involves the integration of similar IT functions (Wijnhoven et al., 2006), i.e. only the software packages that support similar business processes across the whole organization (Giacomazzi et al., 1997). This approach is often realized by a 'best-of-breed' selection procedure. Best-of-breed is basing the new IT on a combination of individual parts of the two previous IT environments (Wijnhoven et al., 2006). However, a determination is required of what is actually best for the new organization.

The fourth approach is *synchronization*, which creates software and hardware bridges with the aim to consolidate the data or periodically synchronize the different systems. This approach involves minimal IT integration, because the two organizations continue to process their individual information needs within their current IT environment. A benefit of this approach is that interruption of business processes will not occur. However, future problems can arise because of the inability to share information through an integrated IT environment. Moreover, the new organization uses redundant systems, which results in the inability to realize economies of scale (Harrell & Higgins, 2002; Wijnhoven et al., 2006).

In the previous subsection (3.2.2), three IT integration types were discussed, which can be related to the above four IT integration approaches. Table 3-5 provides an overview which approach can be applied for each IT integration types.

In the table below, complete IT integration is related to three IT integration approaches: the replacement of structure, processes and systems of both organizations with a new, unified operating model ('renewal') and using IT of one of the organizations for both organizations ('take-over'). The third IT integration approach, 'standardization' has an overlap with complete IT integration and partial IT integration. 'Standardization' combines "the best parts of both IT environments as the new standard for the new organization" (Wijnhoven et al., 2006). IT co-existence is related to the approach 'synchronization', which preserves the original IT environments of both organizations, and creates software and hardware bridges to consolidate the data or periodically synchronize the different systems (Wijnhoven et al., 2006).

IT integration types ⟍ IT integration approaches	Complete IT integration	Partial IT integration	IT co-existence
Renewal	X	-	-
Take-over	X	-	-
Standardization	X	X	-
Synchronization	-	-	X

Table 3-5 - IT integration approaches related to IT integration types (Wijnhoven et al., 2006)

3.2.3.1 Results of IT integration

IT integration is an important factor in realizing the business related goals, after the complex activities of mergers and acquisitions (Dudas & Tobisson, 2007). According to Markus (2001), IT integration is driven by business related goals, which can be discussed in terms of strategic- and techno-economic benefits. The first one, *strategic benefits* are focused on long term benefits related to increase performance in the market place. The goal is to improve the business effectiveness. For instance, to enhance customer satisfaction through shortening delivery times by integration of the logistics- and production systems (Dudas & Tobisson, 2007) or organization and overall strategic operational goals (Lin et al., 2010). *Techno-economic benefits* are cost related, to minimize maintenance or licensing costs. The goal is to make IT integration efforts more efficient. An example of this would be to implement an Enterprise Resource Planning system, to avoid the maintenance costs of a complex peer-to-peer infrastructure (Markus, 2001).

3.2.3.2 Levels of IT integration

Several authors (S. Henningsson, 2008; Linthicum, 1999; Puschmann & Alt, 2004) have made efforts to conceptualize levels of IT integration, which can be carried out in accordance with one or more of these levels. Dudas and Tobisson (2007) consider a three layer model to provide the relevant granularity with the levels Technology, Application, and Business levels. These integration levels relate to each other in a hierarchical way, where integration at the technological level is the lowest one as depicted in the figure below.
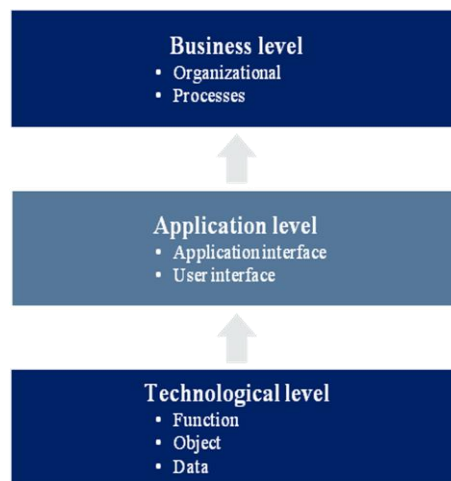
Figure 5 - Three levels of integration, adopted from Dudas and Tobisson (2007)

Integration on *technological level* is concerned with the most important pieces of an Information System, such as data integration, objects and functions (S. Henningsson, 2008). The technical level acts as the foundation for integration on the *Application level*. This level is concerned with user and application interfaces (Dudas & Tobisson, 2007). On the top of the three layer model is *Business level*. This level is concerned with the integration of business processes. Business process integration is related with the information flow and automation based on business logic that may include a number of applications (Al Mosawi, Zhao, & Macaulay, 2006). So, integration on technical and application level has consequences also on business level.

3.3   IT integration in mergers and acquisitions

The merger and acquisition process and IT integration has certain specific characteristics. For IT integration this refers to things like IT infrastructure used and which kind of application is being integrated. For the merger and acquisition process, characteristics could refer to which synergetic benefits are strived that are promised at the time of announcement of the deal for the merged organization. Achieving these synergies requires appropriate attention to the integration process. In this section, the role of IT integration during mergers and acquisitions will be described.

According to Van Kessel (2007), IT is currently within (almost) every company a vital link for conducting business. In subsection 3.2.1, a definition of IT is presented, showing that IT has become more and more tightly intertwined with business operations and strategy over the years (Appplegate, Austin, & McFarlan, 2005). The success of a company and the market where companies operate has been changed through IT. James (1998) provides some characteristics of Information Systems, which underline the crucial role of IT within the current company:

- Information Systems significantly affect the efficiency of the organization, the productivity of employees, customer service, and customer satisfaction;

- Information Systems are an important source of information and support for an effective decision-making at management level; and,

- Information Systems are an important source in the development of competitive products and services that gives a company strategic market advantage.

The role of IT integration in mergers and acquisitions corresponds to the role of IT in today's companies, namely IT integration becomes increasingly important to achieve merger and acquisition objectives (Van Kessel, 2007). The role of IT integration in mergers and acquisitions has mostly been highlighted in anecdotes provided by the business press. These publications explain how mergers and acquisitions fail to produce economic value, caused by difficulty in IT integration (McKiernan & Merali, 1995). Theory and model construction is almost non-existent and scientific research has been limited (McKiernan & Merali, 1995; Mehta & Hirschheim, 2004; Robbins & Stylianou, 1999).

The seriousness of the situation is also permeated among several scholars. Their general conclusion is that an understanding of the role of IT in mergers and acquisitions is still very scarce (Aralanta, 2005; Brunetto, 2006; Mehta & Hirschheim, 2004, 2007; Wijnhoven et al., 2006). This conclusion can, of course, be reflected in the business sector, as is demonstrated by several studies. In a recent survey by Accenture (2007), 70 percent of 400 interviewed companies reported that their last merger and acquisition related IT integration failed. The experience of Accenture (2002) consultants over the past decade has shown that integration and stabilization of the IT capability is a critical activity during a merger or acquisition (Accenture, 2002). In the same study by Accenture (2002) in 57 mergers and acquisitions, 67 percent of these respondents reported that IT was not very or not at all involved early on in business discussions about the deal. Moreover, just 59 percent of companies performed an IT due diligence before the deal was closed (Accenture, 2002).

A study performed by PriceWaterhouseCoopers (2004) on 125 companies that have completed a merger or acquisition, has underlined the importance of ensuring an integration of Information Systems and technologies. IT is not deliberated during the merger and acquisition process, in more than 50 percent of the acquirers (McKiernan & Merali, 1995). These studies show that companies did not realize that making the best use IT can bring about competitive advantages for a company (Lin et al., 2010).

Although integration is difficult (Lin et al., 2010), there are many benefits from IT integration. A few examples of benefits are: simplifying extra or contradicting systems, "establishing architecture for continuous quality improvement and organizational management system improvement", and document reduction (McDonald, Mors, & Phillips, 2003). Moreover, integration of IT may contribute towards overall organizational financial performance by providing possibilities for cost-savings and synergies (McKiernan & Merali, 1993; Robbins & Stylianou, 1999; Weber & Pliskin, 1996).

IT plays an important role in the performance of companies and IT has a significant influence on the market of the companies (Van Kessel, 2007). Therefore, IT integration must have a high priority during a merger and acquisition, as organizations rely heavily on IT. "The establishment of information systems therefore becomes very important, as Information Technology progresses with each passing day" (Lin et al., 2010).

3.4 Analysis

This chapter aimed to achieve several goals. The first goal was to provide the reader with an understanding of the terminology of a merger and an acquisition as well as IT integration. The second goal was to provide an explanation about different types and approaches of mergers and acquisitions and IT integration. The overall goal is to provide an answer to the first sub-research question. The above sections summarized the theories and the relation between mergers and acquisitions and IT integration in order to answer the first sub-research question:

> *RQ1   What is the current scientific knowledge about mergers and acquisitions,
> IT integration and the relation between them?*

To achieve these goals, a literature study has been performed. Literature from scientific resources and business press was consulted. The current scientific knowledge about mergers and acquisitions is abundant (Cartwright & Schoenberg, 2006). Many scholars deal with aspects of mergers and acquisitions, such as organizational aspects (Datta, 1991) and cultural aspects (Cartwright & Schoenberg, 2006; Schraeder & Self, 2003; Weber & Pliskin, 1996). The relation between mergers and acquisitions and IT integration will be explained in the next subsections.

3.4.1   *Overview of merger and acquisition and IT integration theories*

This subsection presents a (graphical) overview of merger and acquisition theories and IT integration theories as explained in previous sections. This overview is depicted in Figure 6, included with the individual types and approaches of mergers, acquisitions, IT integration, and levels of IT integration.

The subsections *Merger and acquisition types (3.1.2)*, *Merger and acquisition approaches (3.1.3)*, *IT integration types (3.2.2)*, *IT integration approaches (3.2.3)*, and *Levels of IT integration (3.2.3.2)* form the theoretical baseline of this chapter. This baseline is well suited for two reasons; firstly to overcome the complexity of the theories, the graphical overview presents all the relevant types and approaches of mergers, acquisitions, IT integration, and levels of IT integration in a bigger picture. Secondly, because this chapter is aiming at providing an answer to the question: What is the current scientific knowledge about mergers and acquisitions, IT integration and the relation between them?

In Figure 6, theoretical sources are included of the theories as explained in previous sections. In the next subsection, the relations between the theories depicted in the figure below will be discussed.
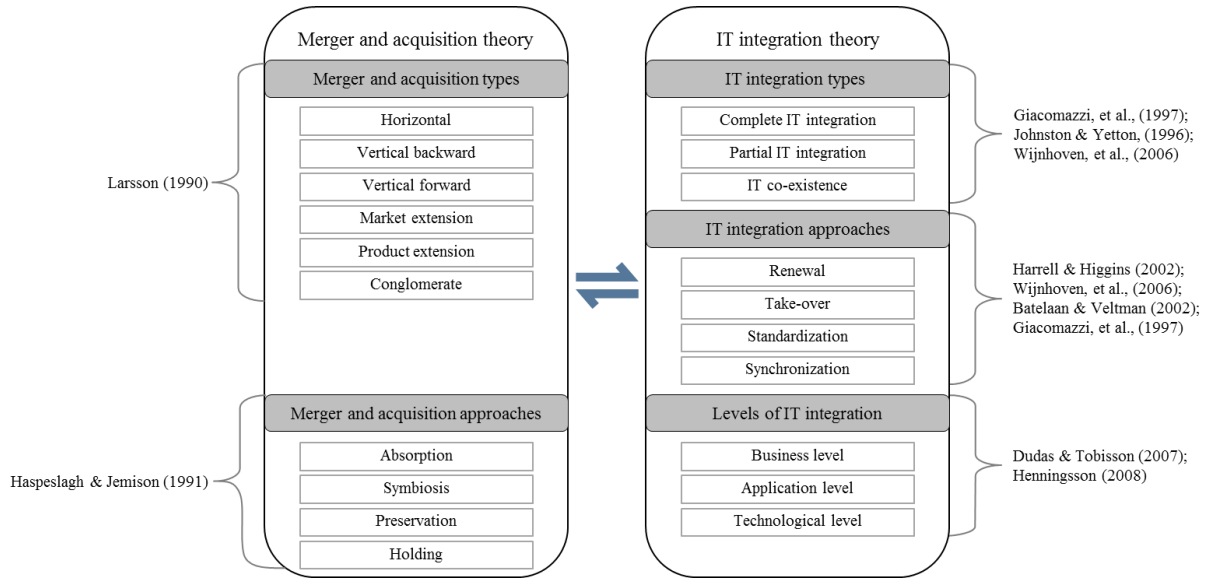

Figure 6 - Graphical overview of merger and acquisition theories and IT integration theories

3.4.2   Relations between mergers and acquisitions and IT integration

The relation between mergers and acquisitions and IT integration can be described in four relations. For each relation, a short summary and graphical overview will be provided to discuss the relation. This graphical overview depicts which approach is best suited in a given situation.

3.4.2.1 Relation A: Merger and acquisition approaches vs. IT integration types

The first relation (A) concerns the four approaches as discussed in subsection Merger and acquisition approaches (3.1.3) as part of the three IT integration types (3.2.2). In *IT integration types*, the most ambitious type is 'complete IT integration'. This type is related to *absorption*, because this approach requires complete integration of the operations, IT, organization and culture. In *symbiosis*, 'partial IT integration' takes place in which business processes in each organization that contribute to the strategic objective of the merger are left intact and business processes that are correspond to each other are combined to reduce redundancy. 'IT co-existence' maintains separate IT environments of the merged organizations, which is related to *preservation* because the capabilities of the acquired company are maintained (Wijnhoven et al., 2006). *Holding* is not really seen as an integration category by any of the authors, since it involves very little of integration activity (S. Henningsson, 2008). Therefore, this approach corresponds not to an IT integration type. In Figure 7, this relation is graphically pictured including arrows showing the theoretical relations.
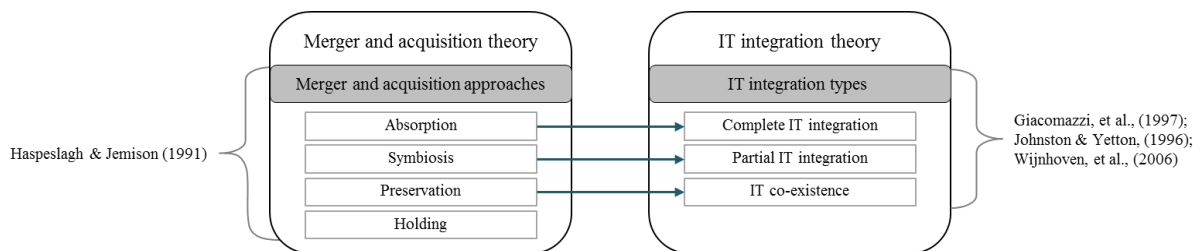

Figure 7 - Relation A: Merger and acquisition approaches vs. IT integration types

3.4.2.2 Relation B: IT integration types vs. IT integration approaches

The second relation (B) concerns the three *IT integration types* (3.2.2) as part of the four *IT integration approaches* (3.2.3). In Figure 8, this relation is graphically pictured including arrows showing the theoretical relations. *Complete IT integration* is related to three IT integration approaches. The first approach is 'renewal', i.e. the replacement of structure, processes and systems of both organizations with a new, unified operating model (Wijnhoven et al., 2006). 'Take-over', the second approach, involves using the IT of one of the merging organizations as the new system of the newly formed organization (Harrell & Higgins, 2002; Wijnhoven et al., 2006). The third IT integration approach, 'standardization', has an overlap with *complete IT integration* and *partial IT integration*. 'Standardization' combines the best parts of both IT environments as the new standard for the new organization. *IT co-existence* is related to approach 'synchronization', which establishes relations (bridges) for data exchange (Wijnhoven et al., 2006).
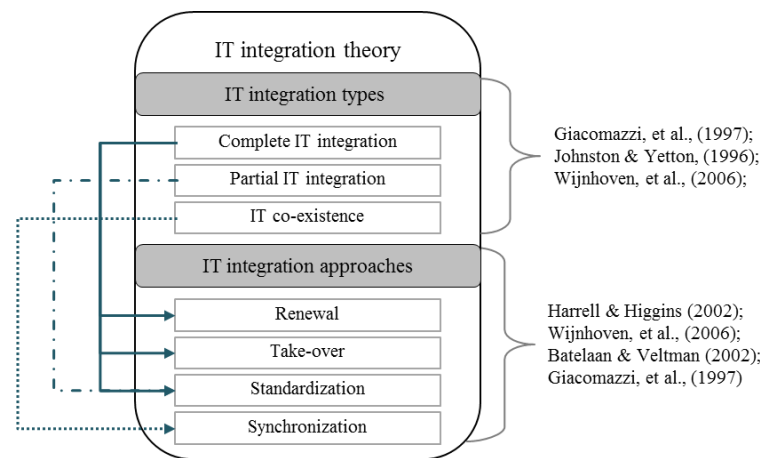

Figure 8 - Relation B: IT integration types vs. IT integration approaches

3.4.2.3 Relation C: Levels of IT integration vs. Merger and acquisition approaches

The third relation (C) concerns the four *Merger and acquisition approaches* (3.1.3) as part of the three *Levels of IT integration* (3.2.3.2). In Figure 9, this relation is graphically pictured including arrows showing the theoretical relations. The highest level of integration approach is *absorption* where business processes are integrated. As discussed in subsection Levels of IT integration (3.2.3.2), Information Systems needs to be integrated to the highest level of integration, 'Business level', in order to achieve integration of business processes (Al Mosawi et al., 2006). Integration approach *symbiosis* is related to integration level 'Application level'. Here it is possible to have different applications that support identical business processes (Dudas & Tobisson, 2007). The integration approach *preservation* is related to 'Technological level', which is concerned with major data exchange as discussed in Levels of IT integration (3.2.3.2) (Dudas & Tobisson, 2007). Finally, the integration approach *holding* does not imply any integration, as stated in the first relation (A).
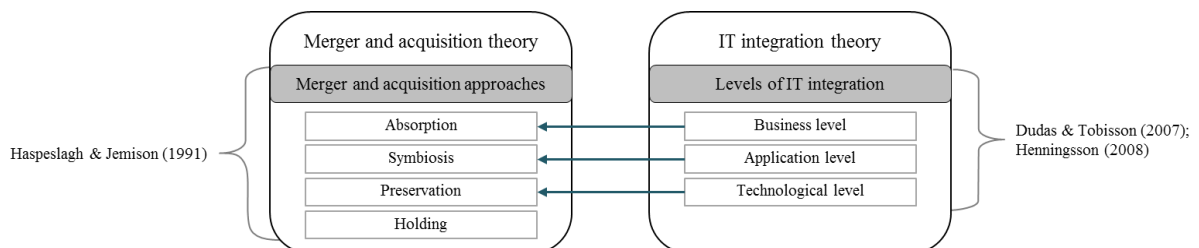

Figure 9 - Relation C: Levels of IT integration vs. Merger and acquisition approaches

3.4.2.4 Relation D: Merger and acquisition types vs. Merger and acquisition approaches

The fourth relation (D) concerns the mapping of *Mergers and acquisitions types* (3.1.2) as part of the four approaches of *Merger and acquisition approaches* (3.1.3). As stated by Buono and Bowditch (1989) and Marks and Marvis (1998), firms engaged in *horizontal*, *vertical backward*, *vertical forward*, and/or *market extension* mergers and acquisitions may actually use each of the four primary integration approaches. Furthermore, *product extension* and *conglomerate* are related to integration approach 'preservation' (Haspeslagh & Jemison, 1991). The figure below provides an overview of the relation of the types of mergers and acquisitions to the four approaches.
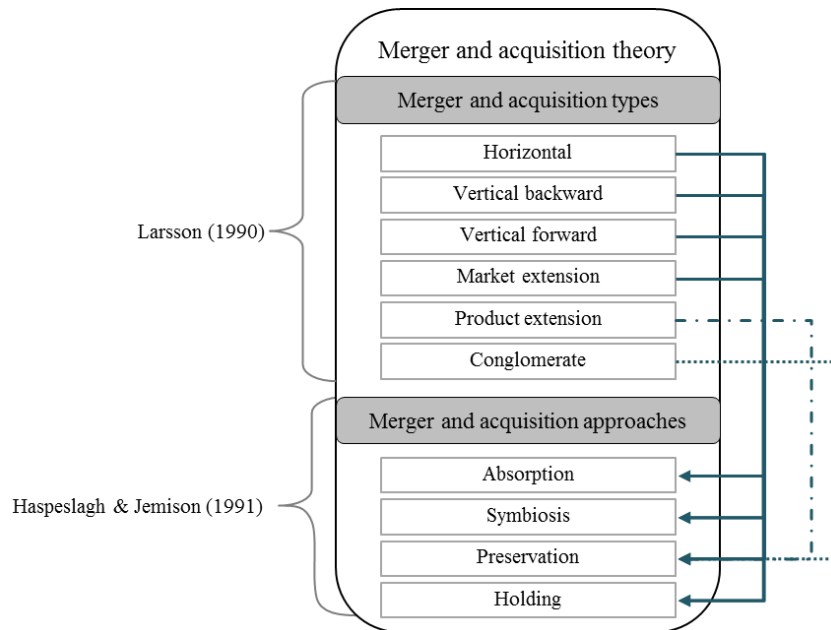
Figure 10 - Relation D: Merger and acquisition types vs. Merger and acquisition approaches

The terminologies that have been described in this chapter will be the input for the following chapters. The next chapter elaborates on the phases of the merger and acquisition process as well as the focus areas that will be further expanded for the design of the framework. Moreover, the terminology will be used to prepare and conduct interviews with experts on the topic IT integration during mergers and acquisitions.

Finally, Appendix B provides an overview of different kinds of publications that specifically addressed the subject of IT integration in mergers and acquisitions.

TOWARDS AN
IT INTEGRATION
FRAMEWORK

4 TOWARDS AN IT INTEGRATION FRAMEWORK

The previous chapter addressed the theoretical baseline of mergers, acquisitions, and IT integration with the intend to begin familiarizing the reader with these concepts. During a merger and acquisition deal, many different activities take place, ranging from evaluating the target organization to actually integrating the involved organizations.

To discuss mergers and acquisition as processes, follows from the insight that merger integration is a complicated activity to actually carry out. The process perspective emphasizes that the merger and acquisition process is an important factor that affects the outcome (Risberg, 1999). Studying mergers and acquisitions from this perspective has enabled researches to reveal additional information on mergers and acquisitions that will be presented in this chapter. Much of the research utilizing the process perspective has underlined the later stages in the process of merging the involved organizations. However, every step of the merger and acquisition process is crucial for the final outcome and should be considered in merger and acquisition research (Haspeslagh & Jemison, 1991).

This chapter deals with the theory from which the framework is derived. The main goal of this chapter is to address the different phases and focus areas to the field of IT integration during mergers and acquisitions with relation to the defined sub-research questions. In the first section, three distinct approaches to the merger and acquisition process will be reviewed and compared in order to create the first dimension of the framework. The second section addresses the focus areas across IT integration in mergers and acquisitions in order to create the second dimension of the framework. The third section presents a combination of these two dimensions into the IT integration framework.

4.1 Phases during mergers and acquisitions

Mergers and acquisitions are processes that occur in phases, with a start and an end at certain points in time. However, the process of a merger and acquisition is described differently by several authors (Aiello & Watkins, 2000; Breindenbach, 2000; Haspeslagh & Jemison, 1991; Marks & Marvis, 1998; Very & Schweiger, 2001). Moreover, the literature does not formally deal with the question of the starting point of a merger and acquisition. This section goes further into detail in reviewing three distinct approaches to the merger and acquisition process, namely a three, five, and six-phase approach. This knowledge will be essential in order to create the IT integration framework.

4.1.1 Distinction of phases during a merger and acquisition

As stated before, during a merger and acquisition deal, many different activities take place with a start and an end at a certain point in time. Describing the merger and acquisition process in different phases has been quite a common approach in the literature to understand this process. In this subsection, we will identify three distinct approaches to the process of mergers and acquisitions.

According to Haspeslagh and Jemison (1991), a merger and acquisition process embraces three phases. However, the boundaries between the phases described by Haspeslagh and Jemison (1991) are vague, many processes seem to be active in more than one phase. The two first phases are decision phases and occur before the deal is signed. The third phase is an implementation phase in which plans are carried out (S. Henningsson, 2008). *Idea or preparation* is the first phase, which identifies the need for a merger or an acquisition based on the strategy of the company. In the second phase *transaction*, the company starts with the search and valuation of suitable candidates as well as the legal and financial negotiations. These two phases, 'idea or preparation' and 'transaction' phase are considered as a pre-merger and acquisition process. In the third phase *integration*, the two companies will be combined into one company, where objectives, measures, and controls are defined. This third phase is considered as post-merger and acquisition process (Haspeslagh & Jemison, 1991).

Aiello and Watkins (2000) distinguished five approaches to the process of mergers and acquisitions. The aim of the first phase, *screening potential deals*, is identifying all potential deals on the market. In the second phase, *reaching initial agreement* embraces the identification of the details, which are critical to the deal's success. Next, *conducting due diligence* is aimed at identifying problems within the potential target that could reveal themselves during the integration phase. The fourth phase, *setting final terms* involves closing the deal and the fifth phase, *achieving closure* is addressed towards leverage of expected gains (Aiello & Watkins, 2000).

The three phases of Haspeslagh and Jemison (1991) and the five phases of Aiello and Watkins (2000) presented above are not the only ones available. Breindenbach (2000) defines six phases of a merger and acquisition. In the first phase *strategy*, the senior management of the company decides to meet their business objectives through acquisition. The *planning* phase involves the selection of potential candidates or engages investment bankers to do so, as well as the estimation of a potential bid. In the third phase, *evaluation* includes obtaining information of the target organization, which allows arriving at a fair bid price. Moreover, due diligence will be performed on the target organization. The *acquisition* phase, the fourth phase, involves negotiations regarding the final terms and conditions to close the deal. During the *integration* phase, the two companies will be combined into one company, based on the nature of the deal as well as the desired levels of consolidation of the management. The sixth phase, *operation* deals to reach a normal operating of the merged companies. How the approaches to the process of mergers and acquisitions relate to each other will be explained in the next subsection.

4.1.2 Comparing the different phases during a merger and acquisition

While reading the descriptions of each phase of the three different papers, similarities can be found among the description of the phases or the name of the phase, as the case with the interpretations of Aiello and Watkins (2000). For instance, the activities in the phase *idea or preparation* of Haspeslagh and Jemison (1991) are very similar to those described in the phase *screening potential deals* of Aiello and Watkins (2000) and the *strategy* phase of Breindenbach (2000). Figure 11 depicts how the different phases relate to each other. A common characteristic is the focus on pre-merger and acquisition activity, where the approaches have the greatest number of phases.
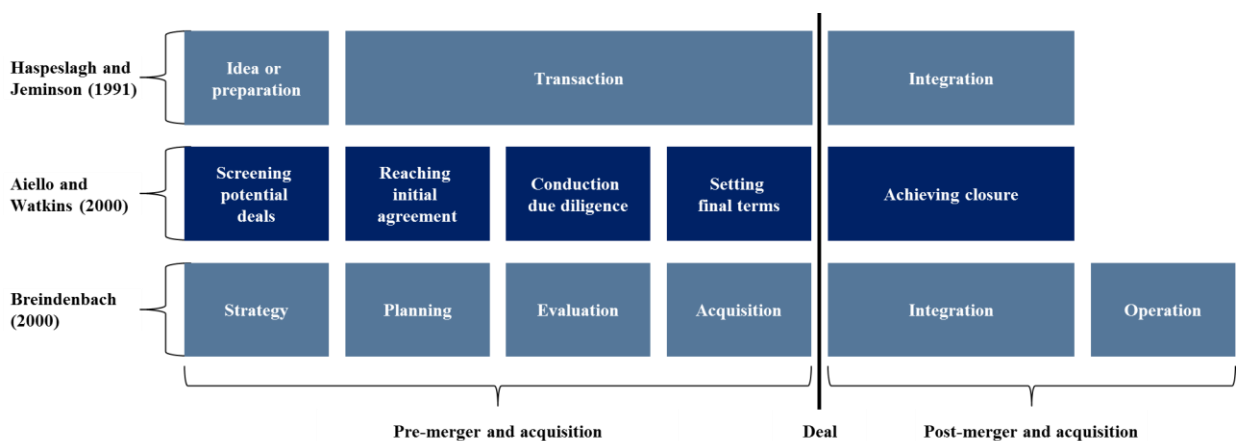
Figure 11 - Comparison between different merger and acquisition phases, adopted from S. Henningsson (2008)

With the exception of the phase *operation* of Breindenbach (2000), the definitions across each phase share similarities. Haspeslagh and Jemison (1991) stop at the *integration* phases and Aiello and Watkins (2000) at the *achieving closure* phase, while Breindenbach (2000) extend past the *integration* phase into the phase *operation*. According to the definition of Breindenbach (2000), the operation phase basically involves the day-to-day operations of the combined company.

Although the differences in definitions of the phases of the merger and acquisition process exist, the overall meaning of the phases is very similar. Therefore, in this thesis the different phases of mergers and acquisitions are defined as:

1. IT Strategy

   IT Strategy

   During the first phase, a merger and acquisition strategy will be determined through an assessment of strategic needs and gaps relative to current business, and determining where and how mergers and acquisitions may close the business gaps. This phase embraces reviewing potentials deals in the market, keeping the original strategy in the forefront. Furthermore, the business situation of the organization will be assessed and the decision is taken if a merger and acquisition strategy will satisfy the business objectives. According to the above definitions of the phases, similarities can be found with the phases *idea or preparation* of Haspeslagh and Jemison (1991), *screening potentials deals* of Aiello and Watkins (2000), and *strategy* of Breindenbach (2000).

2. Due Diligence

   Due Diligence

   The purpose of the second phase is to start-up the project and to conduct an assessment of the current IT state (as-is overview) of the target organization. This information is needed to evaluate the risks, costs and potential value that IT can bring to the deal, and to confirm that the target is indeed a good strategic fit as well as to identify a fair and realistic bid price. Examples of aspects that will be assessed are the alignment between business and IT, spending and budget of IT, application and data infrastructure, and the capability of IT organization. According to the above definitions, similarities can be found with the phases *transaction* of Haspeslagh and Jemison (1991), *conducting due diligence* of Aiello and Watkins (2000), and *evaluation* of Breindenbach (2000). Novices in acquiring organizations perform the due diligence process as an information-gathering exercise. Experienced acquirers, however, link their due diligence closely to business planning (Aiello & Watkins, 2000).

3. Merger integration planning

   Merger Integration Planning

   The third phase consists of two steps: (1) establish a merger integration framework and (2) conduct a merger integration planning. The first step focuses on the post-merger activities of the merger and acquisition deal. In the second step, all the requirements for a successful integration will be planned, for instance integration sequence and timeline, interdependencies and key risks. Furthermore, other objectives of the second step are to map and analyze the current environments in order to determine target environment and to start with tracking expected synergies. According to the above definitions, similarities can be found with the phases *transaction* of Haspeslagh and Jemison (1991), *reaching initial agreement* of Aiello and Watkins (2000), and *planning* of Breindenbach (2000).

4. Integration

   Integration

   The fourth phase focuses on completing integration activities and transferring responsibilities. The aim of this phase is to execute the integration plan across all business functions to capture value and achieve the synergies on which the merger was based. During this phase several activities will be performed, such as building an IT integrated environment, testing the integration, and the transition to business as usual. According to the above definitions, similarities can be found with the phases *integration* of Haspeslagh and Jemison (1991), *achieve closure* of Aiello and Watkins (2000), and *integration* and *operation* of Breindenbach (2000).

As stated earlier, many merging organizations run into problems when integrating their information technology assets, which cause delays in the integration process of mergers and acquisitions (Harrell & Higgins, 2002). Therefore, it is important to make the distinction between the phases of the merger and acquisition process to be able to effectively prepare and plan the integration of IT.

4.2   Focus areas across IT integration in mergers and acquisitions

In the first section of this chapter, we elaborated on the merger and acquisition process, which resulted in four different phases. In this section, we describe the different focus areas across IT integration in mergers and acquisitions.

Due to the low priority of a well-structured approach to IT integration, managers are more concerned with implementing new organizational structures, identifying quick wins, and developing the strategy of the new entity (Boston Consulting Group, 2004). A new IT landscape will be arising, consisting of a patchwork of applications that cannot communicate. Additional costs are usually incurred, because of redundant applications, divergent IT technologies, incompatible data structures, ageing or badly documented software, and business projects that cannot be carried out. Therefore, different focus areas are important to consider, which are addressed in the next subsections. These focus areas will create the second dimension of the framework and are based on a differentiation ranging from Strategy and Imperatives (Business & IT) to following Enterprise Architecture components: Business, Application, Information, Technology, and Security Architecture (Accenture, 2009; Winter & Fischer, 2007).

4.2.1.1 Manage project and stakeholders

According to Meckl (2004), merger and acquisition projects comprise all activities necessary to execute a transaction in which companies merge or another company is acquired. A structured and flexible approach to managing the lifecycle of IT integration in mergers and acquisitions requires a project management approach. Important issues are the selection of people, the assignment of responsibilities, affecting of stakeholders (e.g. customers, suppliers, and competitors), and structuring the project. Therefore, *manage project and stakeholders* is the first focus area.

4.2.1.2 Business/IT alignment

Mergers and acquisitions require a dynamic business environment (Gorter & Matto, 2010). To anticipate effectively with IT on changes in the business is a critical success factor for achieving business strategies and to support effectively and efficiently business processes. This alignment is discussed in literature as "Business/IT alignment". The most common and used alignment model is of Henderson and Venkatraman (1993), referred as Strategic Alignment Model. This model has been extended by Luftman and Kempaiah (2007), with the focus on one company. Alignment is frequently focused only on how IT is aligned with the business. However, alignment must focus on how business and IT are aligned with each other; "IT can both enable and drive business change" (Luftman & Kempaiah, 2007). Because of Business/IT alignment is a subject that affects the whole company and has a direct relation with the overall performance of a company (Gorter & Matto, 2010); we consider *Business/IT alignment* as second focus area.

4.2.1.3 IT organization

During a merger or acquisition, it is crucial to understand the operation and organization of the existing IT organization (Harrell & Higgins, 2002). Cultures of IT organizations differ as corporate cultures; some IT organizations are more technology driven, while other are focused more on business-oriented approaches. Harrell and Higgins (2002) also argue that the IT organization is often a target for cost reductions. Because of these two important issues, *IT organization* is the third focus area.

4.2.1.4 Process integration

Process integration has been considered critical in achieving merger and acquisition related strategic gains (Dudas & Tobisson, 2007). Process integration is more advanced than application integration as the logic for conducting business is included. Process integration is complex and expensive, but offers the most benefits (Al Mosawi et al., 2006). The fourth focus area is *process integration*, with the aim to ensure that tools interact effectively in support of a defined process (Thomas & Neimeh, 1992).

4.2.1.5 Application integration

Experience shows that comprehensive Enterprise Application Integration (EAI) strategies need to focus on more than a single target (McKeen & Smith, 2002). EAI is defined as "the plans, methods, and tools aimed at modernizing, consolidating, integrating and coordinating the computer applications within an enterprise" (McKeen & Smith, 2002). For example, application integration without data integration would provide only part of the solution. Applications are defined by Foorthuis and Brinkkemper (2007) as "the (network of) IT-systems which offer communication and information services for the business and information areas". Insufficient attention is given to the integration of applications, resulting in a patchwork of applications that cannot communicate with each other. Furthermore, "business projects cannot be carried out because, for example, client databases have not been properly integrated" (Boston Consulting Group, 2004). Therefore, we define *application integration* as the fifth focus area.

4.2.1.6 Data integration

According to Thomas and Neimeh (1992), the aim of data integration is to ensure that all the information in the environment is managed as consisting as a whole. Because data integration is the most foundational integration approach (Dudas & Tobisson, 2007), we consider *data integration* as the sixth focus area. This approach integrates data between numerous data sources, allows data to be exchanged, and shared between multiple companies, applications, and resources (Linthicum, 1999; Ruh, Maginnis, & Brown, 2000; Samtani, Healey, & Samtani, 2002).

4.2.1.7 Infrastructure

Another fundamental part for a company is the infrastructure, which comprise the basis for their operations (Weill & Broadbent, 1998). From a technological perspective, infrastructure is defined as "the (network of) hardware devices, operating systems and middleware on which the applications run and which deliver processing, transmission and storage capabilities" (Foorthuis & Brinkkemper, 2007). Infrastructure is very important, because it certainly helps two companies to merge into one (Richardson & Butler, 2006). Moreover, involving the IT organization earlier in the pre-merger phases could prevent problems with the *infrastructure*, resulting from the merger.

4.2.1.8 Security

Data encryption and user- and program authentication are necessary features, when dealing with entities outside your own company (McKeen & Smith, 2002). Security should be one of the most urgent concerns during a merger that companies have (Harrell & Higgins, 2002). Access to the merged corporate environment could be possible, when the Information Systems of the acquired company has a number of "backdoors". This increases the risk of data theft and leaks, for companies facing the challenge of a merger and acquisition. Due to these security breaches, we consider *security* as the eighth focus area.

4.3   Towards an IT integration framework for mergers and acquisitions

In this section, the objective is to describe and present the IT integration framework for mergers and acquisitions. This chapter was aimed at achieving several goals. The first goal was to provide an introduction of the phases and focus areas to the field of IT integration during mergers and acquisitions. The second goal was to present the IT integration framework. The overall goal was to provide an answer on the second sub-research questions.

The above sections summarized four phases of the merger and acquisition process and eight focus areas to the field of IT integration, in order to answer the second sub-research question:

> *RQ2   What factors influence the success of IT integration, during a merger or acquisition?*
>
> > *a.   For each phase of the merger and acquisition process, what factors influence the success of IT integration?*
> >
> > *b.   For each focus area, e.g. data, applications, infrastructure, what factors influence the success of IT integration?*

Based on the first two sections of this chapter, a framework will be created that consists of two dimensions. The first dimension of the framework includes the four phases of the merger and acquisition process, as discussed in section 4.1. The second dimension includes the eight focus areas, as discussed in the previous section. The IT integration framework is depicted in Figure 12.
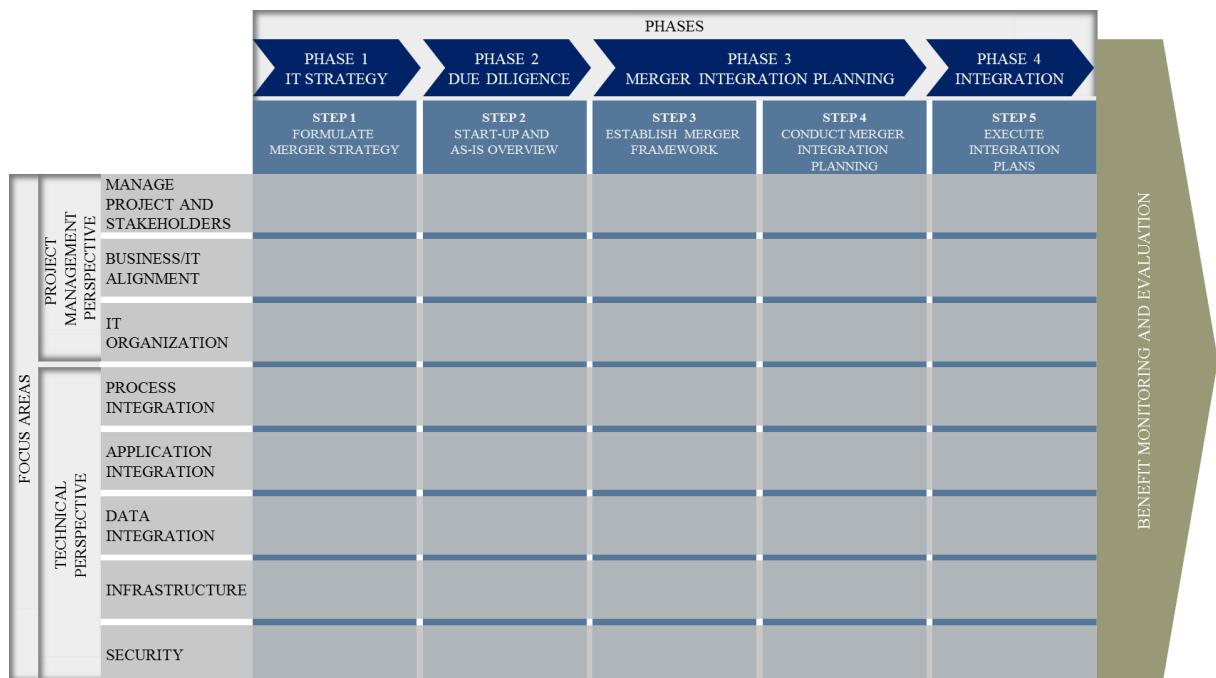

Figure 12 - IT integration framework

4.3.1   IT integration framework for mergers and acquisitions

The main objective of the IT integration framework is to describe and categorize critical success factors during the different phases of the merger and acquisition process and across the different focus areas. As mentioned earlier, merging organizations requires a high priority of a well-structured approach to IT integration. Organizations that take a strategic approach to IT during the entire merger and acquisition life cycle are much more likely to succeed (Accenture, 2008). Therefore, the IT integration framework provides a structured approach for integrating IT, based on the four phases (first dimension) which focuses on the life cycle of the merger and acquisition process. After finalizing the merger or acquisition, organizations can decide to acquire a new target organization based on their strategic reasons (e.g., gaining market share, increasing financial growth, and eliminating competition). Therefore, the four phases and "benefit monitoring and evaluation" are arrow shaped, which indicates that a new future merger or acquisition can be started.

Using a structured approach for integrating IT, the framework helps IT executives to involve IT early in business discussions about the deal, to perform due diligence and to engage in detailed IT integration planning. Moreover, the IT integration framework proposed in this research attempts to increase the awareness of IT integration for organizations in order to successfully combine two business environments. In addition, the focus areas across the four phases to integrate IT can be easily grouped into a set of projects. For example, projects related to: Application Optimization, Data Center Rationalization and Enterprise Architecture Planning.

Below the phases, there are five steps to distinguish. As mentioned in section 4.1, the aim of the first step, *formulate merger strategy*, is to determine a merger and acquisition strategy through an assessment of strategic needs and gaps relative to current business, and determining where and how mergers and acquisitions may close the business gaps. This step comprises for example: creating a solid strategy for identifying and screening candidates, "to quantify the expected value from a combination, and to create a roadmap to execute merger and acquisition strategies in a way that mitigates risk and uncertainty and enables the organization to focus on business as usual" (Accenture, 2010). The second step, *start-up and as-is overview*, embraces to start the project with the objective to appoint a project team and confirm the scope. Additionally, an assessment of the current IT state, called an 'as-is overview', is also part of this step to gather IT related information from the target organization. The third step, *establish merger framework*, sets the context for IT integration, i.e. to establish and launch communications program, to define merger integration organization, and to prepare a merger integration roadmap. In the fourth step, *conduct merger integration planning*, all the requirements for a successful integration will be planned, for instance integration sequence and timeline, interdependencies and key risks. Finally, the fifth step, *execute integration plans*, focuses on completing integration activities and transferring responsibilities in order to get the combined organization back to 'business as usual'.

Another important issue is the evaluation of the merger and acquisition integration activities, especially for organizations who want to perform future mergers and acquisitions. This provides organizations to evaluate, and in many cases, there are lessons to be learned from the prior four phases. "Often neglected, this is an activity which can identify and highlight mistakes made in the merger or acquisition" (Hsu & Chen, 2006). From this effort, organizations may be able to have insight in the reduction of IT headcounts and data center costs, consolidation of Information Systems, and rationalization of applications. Moreover, like any other business function, merger integration should be monitored and measured in order to improve this process. After the merger integration is complete, evaluating the merger strategy provides context to determine actual financial costs and benefits to understand the potential value related to the merger and acquisition.

According to Hsu and Chen (2006), "the lessons learned from the merger can be used to modify plans and processes for merging and acquiring organizations in the future". This is supported by Boston Consulting Group (2004), which states that by learning from the experiences of organizations that have undergone mergers, merging organizations in any industry can improve their IT integration performance. Therefore, the IT integration framework contains *benefits monitoring and evaluation* as depicted on the right side of Figure 12, as it suggests to acquire a new target organization.

4.3.2   *Validation process of the IT integration framework*

To confirm that the IT integration framework is indeed a useful and satisfactory tool to provide a structured approach for integrating IT, a validation has been performed. The framework is validated with experts in the first group during the interviews by using the Delphi method (Linstone & Turoff, 1975), as mentioned in chapter 2. These experts are listed in Appendix A1. With each expert, a semi-structured interview approach was chosen to leave room for improvisation. All the interviewees were asked to give their opinion on the completeness, correctness, and usefulness of the framework. A few issues were identified during these interviews. After the first version of the framework was constructed, one of the experts suggested to place focus area 'process integration' above focus area 'application integration' in order to provide an overlap of business to IT.

Another suggestion of an expert was to place the eight focus areas in the framework in a hierarchical sequence, which is based on the differentiation of Enterprise Architecture. The hierarchical sequence can be perceived from a project management perspective as well as a technical perspective. This is supported by Braun and Winter (2005), which stated that a hierarchical approach for Enterprise Architecture usually applies the 'IT follows business' principle. The hierarchical approach starts "with the strategic positioning from the business management point of view, then deriving appropriate organizational processes and structures on this basis, and finally specifying the information system, i.e. the interaction between human and technical information system components that appropriately support business requirements" (Braun & Winter, 2005). Winter and Fischer (2007) suggest that most frameworks differentiate the following Enterprise Architecture layers: business, process, integration, software, and technology (or infrastructure) architecture. This line of thinking is supported by Accenture (2009), who developed their own Enterprise Architecture Model (Appendix C). Their model is constructed with the same building blocks as many other Enterprise Architecture frameworks. Accenture (2009) makes a differentiation ranging from Strategy and Imperatives (Business & IT) to following Enterprise Architecture components: Business, Application, Information, Technology, and Security Architecture. For the above mentioned reasons, a hierarchical sequence of the focus areas on the ideas of Enterprise Architecture should be considered. The validation interview results were positive about the IT integration framework, which is constructed from an 'IT thought'.

The concepts that have been described in this chapter and summarized in this section will be the input for the following chapters. In the next chapter, critical success factors will be described that influence IT integration and categorize these factors in the IT integration framework. Improved IT integration could lead to a reduction in merger and acquisition failure.

WHAT FACTORS INFLUENCE THE SUCCESS OF IT INTEGRATION?

5 WHAT FACTORS INFLUENCE THE SUCCESS OF IT INTEGRATION?

In the previous chapter the dimensions of the framework were established aimed at describing and categorizing critical success factors that influence IT integration during a merger or acquisition. The main objective of this chapter is to identify critical success factors that could affect the success of IT integration during mergers and acquisitions. The first section provides a definition of "IT integration success". The second section contains the identification of critical success factors from 11 in-depth interviews. During these in-depth interviews, 25 critical success factors are identified and validated. These factors will be described in sequence based on the four phases as mentioned in the previous chapter. The third section provides the analysis in which an answer to the second sub-research question is provided, including the mapping and ranking of critical success factors.

5.1 IT integration success

In the current literature, the importance of IT integration during mergers and acquisitions is recognized by several scholars (Buck-Lew et al., 1992; McKiernan & Merali, 1995; Wijnhoven et al., 2006). "Successful IT integration can generate a wide range of positive outcomes that support the underlying motives for the merger" (Walter, 2004). For instance, a carefully planned and properly managed IT integration process increases the competitive status of the company (Sheridan, 1995) and strengthens the capabilities of the combined organization (Zhao, 2006).

The definition provided in literature of 'IT integration success' is often implicit or vague. The only exception being the most comprehensive definition of Information Systems integration success found in the literature was first presented by Stylianou et al. (1996), and then further refined by Robbins and Stylianou (1999). Although this research is focused on IT integration, Stylianou et al. (1996) and Robbins and Stylianou (1999) discuss integration success for Information Systems, which contains the following components suggested by Robbins and Stylianou (1999):

- "The ability to exploit opportunities arising from the merger,

- The ability to avoid problems stemming from the merger,

- End-user satisfaction with the integration process and integrated system,

- Improved IS capabilities that help support the underlying motives for the merger, and

- Efficiency and effectiveness of resource utilization during the integration process".

Research provides us with efforts on IT integration success issues, which could be divided into two main research streams. The first stream of research attempts to measure IT integration success, the second stream of research analyzes IT factors that lead to success. Delone and McLean (1992, 2003) conducted two important studies to measure the success of IT integration. They define six related IT success dimensions: system quality, information quality, service quality, user satisfaction, intention to use, and user benefits (Delone & McLean, 1992, 2003). Based on these six dimensions, the success of IT integration can be assessed. The second stream of research tries to prove which factors lead to a successful integration of IT during a merger and acquisition (Giacomazzi et al., 1997; McKiernan & Merali, 1995; Robbins & Stylianou, 1999).

This second stream of research will be the guideline in this chapter. In the next section, critical success factors will be described behind the success or failure of IT integration.

5.2   Critical success factors

Before commencing the literature review, it is necessary to clarify the term 'critical success factor' (CSF). In literature, several definitions of CSF exist. Representing one of the most frequently cited definitions, Rockart (1979) was the first researcher, which defines the CSF concept. He defined "critical success factors (CSFs) as the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department or organization". "CSFs are the few key areas where 'things must go right' for the business to flourish and for the manager's goals to be attained" (Rockart, 1979).

Another definition of CSFs is provided by Lim and Mohamed (1999). They define CSFs as "the set of circumstances, facts, or influences which contribute to the project outcomes". As discussed earlier in this thesis, a structured and flexible approach to managing the lifecycle of IT integration in mergers and acquisitions requires a project management approach. To succeed a project, understanding the CSFs is required (Gardiner, 2005). In this thesis, the working definition of critical success factors are elements from an IT perspective that are crucial for a merger integration to be successful. A critical success factor drives the merger integration forward; it makes or breaks the success of the merger or acquisition.

The subsections below will give a concrete form to the IT integration framework as depicted in Figure 12 in section 4.3, through identifying critical success factors within the four phases during mergers and acquisitions. In Appendix D, the complete list of CSFs is included in this thesis.

5.2.1   Phase 1 – IT Strategy

In the first phase, IT strategy, there are six CSFs identified during the in-depth interviews with experts in the field of mergers and acquisitions from an IT point of view. As discussed in chapter 2, critical success factors are identified with experts per phase and focus area. These factors are listed and elaborated more in depth below.

1. Existence of as-is enterprise architecture;

2. Communicate IT Strategy to business management level and IT organization;

3. Understand and communicate clear business strategy to the organization;

4. Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats;

5. Application portfolio alignment with industry standards; and,

6. Flexibility to respond to changing laws and regulations.

5.2.1.1   Existence of as-is enterprise architecture

In the pre-merger process, the current (baseline) environment, referred as the "as-is" architecture, enterprise architecture blueprints must be in place. In order to guide the merger and acquisition effort, with the blueprints in mind it is easier to make key decisions on what the target architecture (to-be) will be. The organization is able to respond better and more quickly on future mergers and acquisitions.

From literature, this factor is endorsed by Worthen (2002), which emphasized to understand the impact that enterprise architecture will have on mergers and acquisitions. It is up to the Chief Information Officer (CIO) to ensure that Information Technology is part of the business discussions and planning front. To provide a practical example, the former CIO and Business-to-Business officer of Procter & Gamble, Stephen David says that once the company has decided to grow via mergers and acquisitions, the first step for the CIO is the come up with a detailed map of the IT architecture and communicate to other executives readiness to do a merger and acquisition. The CIO needs to have explicit knowledge of the enterprise architecture.

5.2.1.2 Communicate IT Strategy to business management level and IT organization

To avoid vagueness and discussion in the planning and integration phases, the IT strategy should be documented and communicated from the IT leadership team to business management level and IT organization. In the planning and integration phases, you are dealing with deadlines. For example, before the go-live define the critical point which, once passed, makes a roll-back impossible. This critical point is referred to as "point-of-no-return".

5.2.1.3 Understand and communicate clear business strategy to the organization

Clear and effective communication of the business strategy to the organization is necessary to keep the organization in the same direction during the integration process. Based on strategic reasons (e.g., gaining market share, increasing financial growth, and eliminating competition) IT executives must have in place an IT integration strategy following the business strategy in order to plan business continuity.

This factor is endorsed by Rockart, Earl, and Ross (1996), which emphasizes the alignment of IT strategy with the business strategy as fundamental principle. Furthermore, the CIO must become a formal or informal member of the top management team and senior IT executives should be members of key task forces. IT workforce must be present where the business strategies are debated.

5.2.1.4 Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats

An assessment of the IT baseline must be in place in order to have a clear understanding of the current IT situation as well as to evaluate the strengths/weaknesses and opportunities/threats. According to Luftman and Brier (1999), IT executives must be able to outline the strengths and weakness of the technologies in question while understanding the corporate-wide implications. This suggests that IT executives should contribute more positively by identifying the business threats and opportunities available through IT.

5.2.1.5 Application portfolio alignment with industry standards

Alignment of the application portfolio with industry standards is crucial to gain control and to overcome technical incompatibilities between the IT of the merging partners as well as to optimize the application portfolio to achieve a high application portfolio maturity level.

According to Radding (1998), organizations spend up to 50 percent of their IT budgets on application integration. This suggests that during a merger and acquisition the IT organization is often a target for cost reductions. For example, cost reductions can come from establishing standardized enterprise-wide system (Harrell & Higgins, 2002). Furthermore, Popovich (2001) finds that IT organizations should prepare for future mergers and acquisitions by standardizing systems interfaces to deal with infrastructure capacity constraints.

5.2.1.6   Flexibility to respond to changing laws and regulations

Changing laws and regulations must be taken into account, as compliance has surfaced as one of the major business risks in the wake of the latest financial crisis. Organizations are looking for ways to be independent of this, such as implementing technology systems to manage risks in the field of environment, health and safety according to legal rules. The current business environment has evolved into an environment where regulations on local, regional and international levels are increasing.

This suggests conducting a thorough risk analysis to identify issues, which allows the integration team to be in a position to quickly address those issues. Unmanaged issues will have an impact on the efficiency of the organization. Logically, an organization must be prepared for any challenges regarding a merger and acquisition.

5.2.2   Phase 2 – Due diligence

In the second phase, due diligence, there are nine CSFs identified during the in-depth interviews with experts in the field of mergers and acquisitions from an IT point of view. These factors are listed and elaborated more in depth below. Although the critical success factors 9, 12 to 15 are in some way related to components of Enterprise Architecture, these factors are considered as individual in this research due to their connection with the focus areas (e.g. data integration or application integration).

7. Assessment of legal aspects of the target organization;

8. Due Diligence procedures and structure to analyze the target organization;

9. Assess as-is business architecture of the target organization to understand differences and to what extent target business architecture can be leveraged into the new organization;

10. Evaluate capabilities and maturity of IT of both organizations;

11. Analyze current and planned project portfolios of both organizations;

12. Assess as-is business processes of the target organization to understand differences and to what extent target business processes can be leveraged into the new organization;

13. Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization;

14. Assess as-is data architecture of the target organization to understand differences and to what extent target data architecture can be leveraged into the new organization; and,

15. Assess as-is infrastructure architecture of the target organization to understand differences and to what extent target infrastructure architecture can be leveraged into the new organization.

5.2.2.1   Assessment of legal aspects of the target organization

Collecting information about legal aspects of the supplier requires conducting an extensive assessment of suppliers of the target organization. Objective is to get an understanding in existing service contracts, product licenses, data ownership, contract length, termination clauses, etc.

Due diligence embraces not only investigating and validating financial and commercial assumptions, also an assessment of legal assumptions should be included. Sisco (2002) suggests that discovery efforts are kept to vital issues, including "contracts and software license agreements and service level agreements, hardware and software ownership, and licensure". Organizations that performed an IT due diligence increase the chances of a successful integration experience and realized higher financial value from the merger and acquisition (Accenture, 2002).

5.2.2.2   Due Diligence procedures and structure to analyze the target organization

A structured due diligence approach of procedures is required, to analyze the value, collect information, evaluate the risk and costs from the target organization, establish an appropriate level of breadth and depth for the due diligence process and make requests to receive critical data and information from the target company.

The time span of the due diligence depends on the nature, size, and complexity of the merger and acquisition (Angwin, 2001), vary from ten days to two months (Beckmann, 2003). Because the success of a merger and acquisition is related to the amount and quality of due diligence, it is important to clearly define the due diligence objective (Sisco, 2002).

5.2.2.3   Assess as-is business architecture of the target organization to understand differences and to

what extent target business architecture can be leveraged into the new organization

Assess how well the current business architecture of the target organization meets the current business requirements. Perform an assessment of organization charts, role descriptions, headcounts by level and departments, to understand differences between the business architecture of both organizations as well as to what extent target business architecture can be leveraged into the new organization.

5.2.2.4   Evaluate capabilities and maturity of IT of both organizations

It is unclear to what extent IT assets and applications of both organizations can be integrated and leveraged. An assessment of the maturity of IT capabilities of the target organization is required, to identify areas for maturity level improvement.

Based on a research study conducted by Accenture (2002), it is critical to have a vision of future IT capability. Insufficient attention to IT integration can lead to a merged organization whose IT capability cannot support the new business processes (Accenture, 2002).

5.2.2.5   Analyze current and planned project portfolios of both organizations

An overview of current and planned projects of both organizations is required, to understand existing portfolio of projects. Organizations must look at whether the IT portfolio is balanced in terms of for example risk, technology, and payback period. In the context of project portfolio, due diligence means that an organization should establish a documented, quality process for making major decisions regarding project investment (Merkhofer, 2010).

5.2.2.6   Assess as-is business processes of the target organization to understand differences and to

what extent target business processes can be leveraged into the new organization

Assess how well the business processes of the target organization are aligned with the business processes of your organization, to understand differences between the business processes of both organizations as well as to what extent target business processes can be leveraged into the new organization.

This factor is supported by Mack (2006), who states that due diligence is concerned with business processes of the target company. According to Clever (1993), the achievement of synergies through common business processes depends on a successful IT integration. IT plays an important role by enabling the innovative redesign of core business processes, when organizations are dealing with business process redesigns as a result of the merger and acquisition deal (Brancheau, Janz, & Wetherbe, 1996). This suggests the importance of integration IT, as in most of today's organizations the processes are enabled by IT systems.

5.2.2.7 *Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization*

Assess how well the existing applications of the target organization support the current business processes. Perform an assessment of the application architecture to establish its functional and technical health and cost of ownership, to understand the integration impact of both organizations as well as to what extent target application architecture can be leveraged into the new organization.

Due diligence has to do with the assessment of application architecture, to estimate the cost, time, and effort required for integration of the target application architecture. For example, this assessment includes an understanding of the current application architecture of the organization and how changes in business strategy will require changes in the application portfolio, and assess the functional and technical adequacy of each application. As mentioned earlier in this research, organizations fail to realize the objectives of a merger due the lack of an IT integration roadmap. Without an integration roadmap, the application architecture of the merger organization can result in a patchwork of applications. According to Bhatia (2007), integration issues can be better identified by the assessment of the application architecture with reference to the baseline reference architectures.

5.2.2.8 *Assess as-is data architecture of the target organization to understand differences and to what extent target data architecture can be leveraged into the new organization*

Assess how well the current data architecture of the target organization meets the current business requirements. Perform an assessment of data management, governance, structure, architecture, master data, quality and security to understand differences between the data architecture of both organizations as well as to what extent target data architecture can be leveraged into the new organization.

5.2.2.9 *Assess as-is infrastructure architecture of the target organization to understand differences and to what extent target infrastructure architecture can be leveraged into the new organization*

Assess how well the current infrastructure of the target organization meets the current business demand and how well they are aligned in terms of performance and cost. Perform an assessment of infrastructure architecture to understand the integration impact both organizations as well as to what extent target infrastructure architecture can be leveraged into the new organization.

As the same applies to the assessment of the application architecture, infrastructure architecture is also part of the due diligence. This assessment can be supported by documentation and diagrams on networks, servers, datacenters, and workplace infrastructure.

5.2.3 Phase 3 – Merger integration planning

In the third phase, merger integration planning, there is one CSF identified during the in-depth interviews with experts in the field of mergers and acquisitions from an IT point of view. The factor concerning specifically the merger integration planning is listed and elaborated more in depth below.

16. Establish program management and integration organization to manage integration activities.

Establish program management and integration organization to manage integration activities

Mobilizing a program management office and integration organization is required to address the best interests from both organizations and to establish proper governance, structure, communication, control, and report around integration activities. It is important to manage these integration activities in order to report to stakeholders and to reach the desired objectives of the merger. This factor is endorsed by business press as well as scientific literature. According to Epstein (2004), a successful merger integration must be demonstrated through the structure, leadership, and establishing of the integration organization.

"To ensure interest from both organizations, you will need a 'mediator'".

Interviewee 1.2

Vester (2002) also promotes the use of a program management. Ensuring a successful merger and acquisition depends on following a disciplined integration program based upon best practices (Vester, 2002). The integration organization should be balanced with members of both organizations, following by a project-management approach. This is supported by business press, which states that successful merger integration should incorporate a program management office (Murphy, LeWand, Creason, & Smalstig, 2008).

Based on a research survey conducted by Accenture (2002), the success of IT integration will be enhanced with a dedicated IT integration team and manager (Accenture, 2002). This manager will be made responsible for managing the overall integration process (Ashkenas, DeMonaco, & Francis, 1998).

5.2.4 Phase 3 & 4 – Merger integration planning & Integration

Although the main objective was to identify critical success factors per phase, the decision was made to combine the phases "merger integration planning" and "integration" after discussion with experts (2, 3, and 5) of the second interview group (Appendix A2). The consequence of this is that six critical success factors have an overlap with the phases "merger integration planning" and "integration". Moreover, from a practical point of view, IT executives must pay more attention to these factors and make preparations to allocate essential resources that are required to bring IT integration into success.

In this sub-section, these six factors are listed and elaborated more in depth below.

17. Manage and integrate corporate culture of both organizations;

18. Engagement of key stakeholders and establish strong leadership to support the merger integration;

19. Align business and IT integration in merger integration planning;

20. Communicate clear IT Merger integration guiding principles to IT stakeholders;

21. Set up security management plan concerning security breaches; and,

22. Establish and communicate integrated IT change plan to key stakeholders.

5.2.4.1   Manage and integrate corporate culture of both organizations

To know which way a project can be performed, one should understand the current corporate culture of both organizations. It is required to identify gaps between the two corporate cultures in order to create the desired combined culture of both organizations. Based on this culture analysis, the design of a culture change plan can be developed, which consists of a culture integration strategy. An example of a culture integration strategy is that the two organizations operate with separate cultures. During a merger, the new management are asking people to perform in new ways. Managing the "journey" of change involves attention to some human principles, e.g. the people most affected by the change need to feel part of what is going on, as early as possible. Another human principle is that managers need to be able to lead the change in their areas, but they themselves may first need help to understand its full implications. These human principles must be planned to ensure that a workforce both can and will perform over the course of a change journey. Change doesn't happen all at once, but in a sequence of related phases through an almost relentless communication program and other activities designed to build confidence in the new environment.

Despite the fact that human and cultural issues in a merger and acquisition are hard to analyze, organizations recognize the critical importance of this issue (De Camara & Renjen, 2004). According to Weber and Pliskin (1996), culture fit is important, but poorly defined in mergers and acquisitions. Poor culture fit causes employees to spend more time worrying about their jobs rather than about sales and customer satisfaction. To overcome this, maintaining the moral by addressing employee concerns about benefits is important. De Camara and Renjen (2004) states that organizations need to take into account the corporate culture of the new organization.

5.2.4.2   Engagement of key stakeholders and establish strong leadership to support the merger integration

To reduce uncertainty about the future direction of the merged organization, one should ensure that key stakeholders support the program as well as establishing a strong leadership presence, which has the courage to act. In transformation programs, engagement of key stakeholders is seen as fundamental to the success of the merger integration (Kotter, 1995). According to Schneider (2003), failure of mergers and acquisitions is caused by the clash of leadership between the two organizations. Culick (2002) suggests establishing leadership, in the form of an "integration champion", which is critical to merger success. The "integration champion" is usually a person at senior management level, which has the authority to make organizational changes happen (McKersie & Walton, 1991).

5.2.4.3   Align business integration and IT integration in merger integration planning

Critical is the alignment of business and IT during business discussions (e.g. defining functional system requirements) to ensure effective business integration and IT integration. This requires frequent communications between the business and IT during planning and executing of the integration. Business/IT alignment has been a constant struggle for many organizations. Especially the complexity and effort required to achieve business/IT alignment when two organizations are trying to merge into one. Organizations that have achieved alignment can build a strategic competitive advantage to compete in today's fast changing markets (Luftman & Brier, 1999).

5.2.4.4   Communicate clear IT Merger integration guiding principles to IT stakeholders

IT guiding principles should be reviewed and approved by all key IT stakeholders and communicated to broader IT integration teams. During the merger integration planning and the integration phases, numerous activities are performed and many people are involved. To control everything tightly, Schweiger (2002) suggests articulating guiding principles to help ensure that the basic philosophy underlying the integration is understood. An example of a guiding principle with regard to infrastructure is: IT will provide an integrated, scalable and efficient infrastructure that promotes effective global information access and standards.

5.2.4.5 Set up security management plan concerning security breaches

Organizations during a merger and acquisition are facing the challenge with security. Access to the merged organization environment could be feasible. It is important to set up both technical and procedural protection against intrusion, in order to make sure that the systems are well guarded. Saint-Germain (2005) states that organizations need to deal with a multitude of information security risk, ranging from malicious damage, theft, to natural risks. Therefore, a security management plan is imperative to prevent security issues during the integration phase.

> *"IT integration is a very important concern: for a financial institution it's their digital vault. Security is and will remain important, even during the transformation, when the vault is 'open'."*
>
> *Interviewee 1.1*

5.2.4.6 Establish and communicate integrated IT change plan to key stakeholders

An integrated IT change management plan is required to manage effectively the wide range of changes involved and to ensure that stakeholders are engaged in the change effort. Communication and training are important in change management, to reduce uncertainty of key stakeholders (customers, employees, partners, and suppliers).

The management of post-merger integration issues is in many ways common to change management (Maire & Collerette, 2011). Open communications, a clear organizational structure, and a strong leadership will establish a sense of trust (Appelbaum, Gandell, Yortis, & Jobin, 2000). An important process in change management is training and education provided to employees, users, or suppliers (Ngai, Law, & Wat, 2008). Therefore, it is necessary to comprise change management techniques during the integration phase (Maire & Collerette, 2011).

5.2.5   Phase 4 – Integration

In the fourth phase, integration, there are three CSFs identified during the in-depth interviews with experts in the field of mergers and acquisition from an IT point of view. In this sub-section, these three factors are elaborated more in depth below specifically related to the fourth phase integration.

23. Set up communication process to manage employee experience;
24. Test integrated business processes with the business; and,
25. Focus first on integration, business initiatives will be put on hold during merger integration.

5.2.5.1 Set up communication process to manage employee experience

To win hearts and minds of business employees, a process for communicating the status of the merger integration and celebrating success with stakeholders (business employees) is required.

Significant, constant, and consistent communication from senior management is necessary during the post-merger integration, particularly at the beginning of this phase. To be successful in post-merger integration, over-communication is one of the common elements (Epstein, 2004; Murphy et al., 2008). These communications need to be based on a realistic assessment of facts, which is especially critical with employees, who are concerned about their jobs (De Camara & Renjen, 2004).

5.2.5.2 Test integrated business processes with the business

To validate merged business processes and applications, testing activities with the business are required. To test preparation and mitigate risks associated with the merger conversions or initiation of new systems, Epstein (2004) suggests creating processes for dress rehearsals, also referred as pre-run. According to Majumder (2010), organizations need to plan dress rehearsals to ensure a smooth integration based on careful planning. Therefore, it is necessary to complete testing activities to validate the merged applications, conversion programs and business processes in the integrated environment.

5.2.5.3 Focus first on integration, business initiatives will be put on hold during merger integration.

Focus first on integration, business initiatives will be put on hold during merger integration. It is important to prioritize the integration projects with a sufficient degree of attention. According to Murphy et al. (2008), integration activities should be prioritized based on operational relevance and

"Rome isn't built in one day…".

Interviewee 1.1

return on investment. During post-merger integration, it is important for senior management to realize successes, especially early on in the integration process through implementing quick-wins. An example of a quick win is merging e-mail systems to demonstrate IT integration is happening.

5.3 Analysis

In the previous two sections, definitions of "IT integration success" and "critical success factors" were discussed. During the beginning of the interviews, these definitions could be of value for answering the second sub-research question and is therefore analyzed in the first two subsections of this chapter. Furthermore, critical success factors that could influence the success of IT integration are elaborated for each phase. The third subsection of this chapter will analyze the interview results in order to provide an answer on the second sub-research question:

> RQ2 *What factors influence the success of IT integration, during a merger or acquisition?*
>
> > a. *For each phase of the merger and acquisition process, what factors influence the success of IT integration?*
> >
> > b. *For each focus area, e.g. data, applications, infrastructure, what factors influence the success of IT integration?*

In the previous chapter different phases during mergers and acquisitions are described. This resulted in four phases: IT strategy, due diligence, merger integration planning, and integration. After having discussed the phases, eight focus areas are described for the field of IT integration across mergers and acquisitions. The combination of these dimensions results into the IT integration framework, in order to describe and categorize factors that influence to IT integration during a merger or acquisition.

5.3.1 Mapping of critical success factors in the IT integration framework

As mentioned earlier, the main objective of the IT integration framework is to map out critical success factors during the different phases of the merger and acquisition process and across the different focus areas. In order to provide schematically an answer to the second sub-research question, the identified critical success factors are mapped in the IT integration framework in Figure 13.

The ID of each critical success factor in the figure below, correspond to the numbering of the critical success factor in the previous section and are depicted in blue. Furthermore, three critical success factors which are not related to a focus area are mapped in the row called "generic", depicted in green.
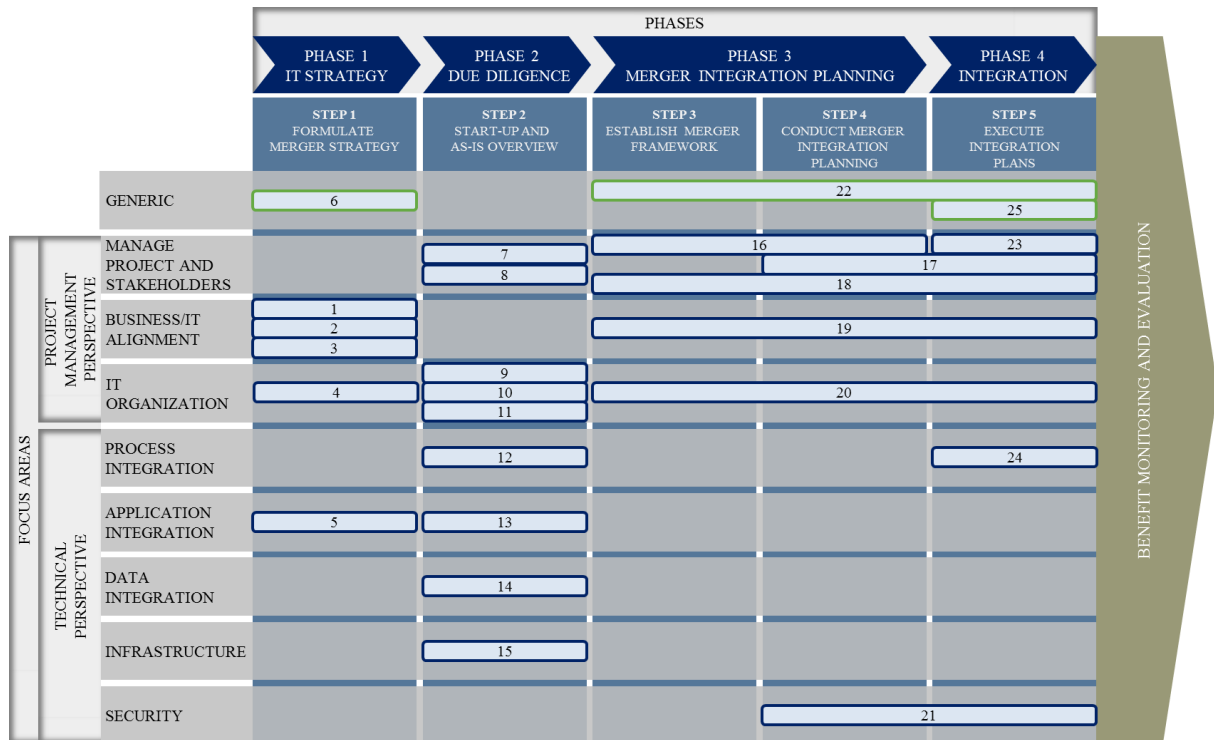
Figure 13 - Critical success factors mapped in the IT integration framework

From the above mapping of critical success factors, it can be concluded that at least one or more critical success factors for each phase and focus area are mapped in the IT integration framework. Especially, more than half of the identified factors (15 of the 25) are identified and validated in the first two phases of the process of a merger and acquisition. In the last two phases, merger integration planning and integration, a lot of factors (e.g. with ID 16 to 20) are identified from a project management perspective. Furthermore, critical success factors have an overlap in the last two phases contrary to the first two phases, which arise from discussions with experts in the second interview group as stated earlier in this chapter.

The focus areas are placed in a hierarchical sequence as mentioned in chapter 4, which can be perceived from a project management perspective as well a technical perspective. This sequence caused an emptiness in the bottom right of the IT integration framework, with the exception of critical success factor '21'. The reason for this 'gap' can be that the selected experts for the interviews are more experienced in the first two phases rather than in the last two phases from a technical point of view. Although the researcher can choose to place the critical success factors into another sequence, in such a way that the 'gap' becomes less noticeable. However, the hierarchical sequence of the focus areas remains of great importance with consideration for the input of the experts.

5.3.2 Ranking of critical success factors

Although the number of studies examining the importance of critical success factors has increased, most studies still remain limited to the only identification of these factors. Moreover, these studies do not address the individual degree of importance of critical success factors at all (Amberg, Fischl, & Wiener, 2005). Out of the more comprehensive studies addressing the identification as well the importance of critical success factors, two different approaches can be found. The first approach is implemented by Pinto and Prescott (1988), which is based upon the same set of critical success factors at all times, while examining their individual degree of criticality. In contrast, other studies have chosen to define different sets of critical success factors for each project phase (Amberg et al., 2005). Although differently executed, both concepts generally tend to refer to the same set of critical success factors.

Several approaches and contributions in carrying out a study on critical success factors can be found in literature (Hamid, 2011). One the approaches is the method to identify critical success factors such as interviews, analysis of previous studies, and case studies (Sohal & Terziovski, 2000). Another approach is to conduct a factor analysis or by sending a questionnaire to the respondent to confirm the level of criticality (Chow & Cao, 2008). According to Esteves (2004), in order to gain insight in the importance of critical success factors, researchers most frequently use case studies and questionnaires based on interviews. Experts are asked to create a list of the most important critical success factors for each phase. Subsequently, these experts are asked to examine the relevance of individual critical success factor using a scale of importance.

The interviewees of the second group were asked to rank and score the identified critical success factors for their level of criticality towards IT integration success and the degree of importance. To identify the degree of importance of each critical success factor, a 5-point scale was provided, ranging from low to high. For the level of criticality, also a 5-point scale was provided, ranging from extremely critical (high) for IT integration success to neither critical (low) for IT integration success. Ramaprasad and Williams (1996) noted that although critical success factors were widely used by academic researchers and practitioners, it is important to distinguish different levels of criticality. Pinto and Prescott (1988) "argued that the majority of the studies in the critical success factor research stream have been theoretical and have assumed a static view of the importance of various factors over the life of a project. In other words, a critical success factor was assumed to have the same degree of importance throughout the life of a project". Pinto and Prescott (1988) examined changes in the criticality of critical success factors throughout the lifecycle of a project. They concluded that the level of criticality of a critical success factor "is subject to change during the different stages of a project lifecycle". Therefore, in this study is chosen to outweigh the level of criticality to the degree of importance with 1,2. Furthermore, the scores of the degree of importance and the level of criticality are multiplied, instead of the sum of individual scores, in order to obtain a better distribution of the scores. The formula used to calculate the score of the critical success factors is:

Ranking score = (0,8 * degree of importance) * (5 – (1,2 * level of criticality))

The fact that the level of criticality score minus 5 has been calculated, is because the above mentioned scale of ranking has differences (low-high degree of importance vs. high-low level of criticality).

The tables below include the top 3 of critical success factors, which are identified in phases IT Strategy, due diligence, merger integration planning, and integration. The numbers in column 'ID' correspond to the numbering of the critical success factor in previous section.

#	Degree of importance	Level of criticality	Score	ID	Critical success factor	Focus area	Phase
1	5,00	1,33	13,62	3	Understand and communicate clear business strategy to the organization	Business/IT Alignment	IT Strategy
2	4,67	2,00	9,71	4	Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats	IT Organization	
3	4,00	3,33	3,21	1	Existence of as-is enterprise architecture	Business/IT Alignment	

Table 5-1 - Top 3 ranking of CSFs in phase IT Strategy

#	Degree of importance	Level of criticality	Score	ID	Critical success factor	Focus area	Phase
1	3,33	2,00	6,93	7	Assessment of legal aspects of the target organization	Manage project and stakeholders	Due diligence
2	3,55	3,56	2,07	13	Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization	Application	
3	3,50	3,67	1,67	8	Due Diligence procedures and structure to analyze the target organization	Manage project and stakeholders	

Table 5-2 - Top 3 ranking of CSFs in phase Due diligence

#	Degree of importance	Level of criticality	Score	ID	Critical success factor	Focus area	Phase
1	3,67	2,33	6,47	17	Manage and integrate corporate culture of both organizations	Manage project and stakeholders	Merger integra-tion planning
2	3,75	2,42	6,29	16	Establish program management and integration organization to manage integration activities	Manage project and stakeholders	
3	3,83	2,83	4,91	18	Engagement of key stakeholders and establish strong leadership to support the merger integration	Manage project and stakeholders	

Table 5-3 - Top 3 ranking of CSFs in phase Merger integration planning

#	Degree of importance	Level of criticality	Score	ID	Critical success factor	Focus area	Phase
1	4,00	2,33	7,05	25	Focus first on integration, business initiatives will be put on hold during merger integration.	Generic	Integration
2	3,67	2,33	6,47	17	Manage and integrate corporate culture of both organizations	Manage project and stakeholders	
3	3,83	2,83	4,91	18	Engagement of key stakeholders and establish strong leadership to support the merger integration	Manage project and stakeholders	

Table 5-4 - Top 3 ranking of CSFs in phase Integration

With better understanding of the comprehensive identification of critical success factors and ranking the degree of importance and level of criticality of each factor, IT executives will be able to judge and allocate essential resources that are required to bring IT integration to success.

Based on the above top three critical success factors for each phase, an overall top 10 is provided in the table below. Because factor 17 and factor 18 are overlapping in the phases "merger integration planning" and "integration", these two factors are omitted to avoid duplication in the table.

To realize the maximum value from merger and acquisition transactions, this study shows that organizations should incorporate mergers and acquisitions in their IT Strategies.

#	Degree of importance	Level of criticality	Score	ID	Critical success factor	Focus area	Phase
1	5,00	1,33	13,62	3	Understand and communicate clear business strategy to the organization	IT Strategy	Business/IT Alignment
2	4,67	2,00	9,71	4	Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats	IT Strategy	IT Organization
3	4,00	2,33	7,05	25	Focus first on integration, business initiatives will be put on hold during merger integration.	Integration	Generic
4	3,33	2,00	6,93	7	Assessment on legal aspects of the target organization	Due Diligence	Manage project and stakeholders
5	3,67	2,33	6,47	17	Manage and integrate corporate culture of both organizations	Merger integration planning & Integration	Manage project and stakeholders
6	3,75	2,42	6,29	16	Establish program management and integration organization to manage integration activities	Merger integration planning	Manage project and stakeholders
7	3,83	2,83	4,91	18	Engagement of key stakeholders and establish strong leadership to support the merger integration	Merger integration planning & Integration	Manage project and stakeholders
8	4,00	3,33	3,21	1	Existence of as-is enterprise architecture	IT Strategy	Business/IT Alignment
9	3,55	3,56	2,07	13	Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leverage into the new organization	Due Diligence	Application
10	3,50	3,67	1,67	8	Due Diligence procedures and structure to analyze the target organization	Due Diligence	Manage project and stakeholders

Table 5-5 - Top 10 Key factors for successful integration of IT

IN WHAT WAY DO KEY FACTORS INFLUENCE THE SUCCESS OF IT INTEGRATION?

6 IN WHAT WAY DO KEY FACTORS INFLUENCE THE SUCCESS OF IT INTEGRATION?

The main objective of this chapter is to illustrate the results from the interviews. In the field of IT integration during mergers and acquisitions, there are certain factors that could affect the success of IT integration. The identification of the factors itself is elaborated in chapter five. This resulted in a list with 25 different critical success factors and an understanding of "IT integration success". These 25 critical success factors are ranked for each phase, which results in a top 3 of critical success factors for the phases IT Strategy, due diligence, merger integration planning, and integration. The first section of this chapter shows the results how these key factors influence the success of IT integration, based on four performance indicators. The second section analyzes these results, in order to provide an answer to the third research question.

6.1 Performance indicators

Chapter 5 describes the critical success factors that are identified during the interviews. After ranking these critical success factors, the interviewer asked each the interviewee from the second group how each key factor is related to performance indicators *time*, *quality*, *cost*, and *business value* as discussed in chapter 2. As discussed in the discussion guide (Appendix A5), the experts of the first interview group were asked which performance indicators were used to measure the success as well as which performance indicators were used for the business. Based on the outcome of these interviews, the four performance indicators in Table 6-1 were chosen.

In this thesis, the working definitions of these performance indicators are provided below.

Performance indicator	Definition
Time	Time is defined as "the available time to deliver the project" (Jenkins, 2005), and refers to "the duration and effort needed to complete each activity" (Dickson, 2010).
Quality	Quality represents the fit-to-purpose that the project must achieve to be a success (Jenkins, 2005).
Cost	Cost is defined as "the amount of money or resources available" (Jenkins, 2005).
Business value	Business value is defined as "anything that contributes to an organization's stated primary goals, e.g. increase or protect revenue, reduce/avoid costs, improve service, meet regulatory/social obligations, achieve market strategy, and develop staff" (Morris, 2010).

Table 6-1 - Definitions of performance indicators: time, quality, cost, and business value

6.1.1 Performance indicator: Time

In this subsection, key factors related to performance indicator *time* will be described. During interviews with experts of the second group, each expert was asked to provide his opinion whether a key factor positively or negatively influences the success of IT integration. By taking the average of these opinions, the influence is depicted with a graphical gauge whether a key factor has positive (green) or negative (red) influence on the success of IT integration. In case, it is unsure whether a key factor has a positive or negative influence, the pointer in graphical gauge indicates the color yellow. In Appendix E1, the descriptions of key performance indicator time for each key factor is included in this thesis.

6.1.1.1 Existence of as-is enterprise architecture

Phase 1: IT Strategy	Focus area: Business/IT Alignment
Especially for large organizations, the board of such an organization nowadays has many complicated issues on their agenda. For instance, the relations between on the one hand the products and services offered by the organization and on other hand their organizational structure. In this case, issues of dealing with the consequences of a merger take a lot of time. Developing Enterprise Architecture blueprints provides insight into the current IT organization for IT executives. These blueprints save time during a merger and provide a valuable baseline for estimating synergies and building a business case for integration. When an organization has defined their Enterprise Architecture, between closing the deal and defining the integration planning, the duration of the merger will be decreased in terms of time.	

6.1.1.2 Understand and communicate clear business strategy to the organization

Phase 1: IT Strategy	Focus area: Business/IT Alignment
Communicating the business strategy to the organization will reduce time with leaders to ensure alignment of daily signals to the strategic direction.	

6.1.1.3 Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats

Phase 1: IT Strategy	Focus area: IT Organization
An assessment of the current IT baseline of the organization will decrease decision-making effort during identifying areas for development of IT.	

6.1.1.4 Assessment of legal aspects of the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
Understanding the legal aspects with suppliers of the target organization, will decrease the decision-making process during the negotiation in terms of time.	

6.1.1.5 Due Diligence procedures and structure to analyze the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
With a defined level of breadth and depth, due diligence can be done rapidly within a structured approach.	
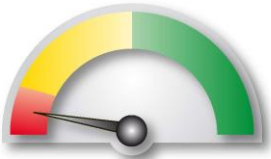
6.1.1.6 Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization

Phase 2: Due diligence	Focus area: Application
When the target organization has defined their application architecture before the deal is closed, the overall progress of the merger will be decreasing in terms of time, because the assessment of the application architecture can take place immediately.	

6.1.1.7 Establish program management and integration organization to manage integration activities

Phase 3: Merger integration planning	Focus area: Manage project and stakeholders
With a program management and an integration organization that will work full time on the integration plan, people know on which role they must focus, which enhances the effort needed to complete the merger integration.	

6.1.1.8 Manage and integrate corporate culture of both organizations

Phase 3: Merger integration planning Phase 4: Integration	Focus area: Manage project and stakeholders
Integration of cultures is a major challenge inside the IT function, because IT executives are by their nature mainly experienced in managing technology. Also people need to be managed effectively as well. To gain experience and wisdom on organizational integration requires a lot of effort for IT executives.	

6.1.1.9 Engagement of key stakeholders and establish strong leadership to support the merger integration

Phase 3: Merger integration planning Phase 4: Integration	Focus area: Manage project and stakeholders
The progress of making decisions increases with the engagement of key stakeholders and with a strong leadership, because speed is value when it comes to mergers.	

6.1.1.10 Focus first on integration, business initiatives will be put on hold during merger integration.

Phase 4: Integration	Focus area: Generic
Understanding of currently executed business initiatives results in defining the scope and reducing the duration of the merger integration.	

6.1.2 Performance indicator: Quality

In this subsection, key factors related to performance indicator *quality* will be described. As mentioned earlier in this chapter, during interviews with experts of the second group, each expert was asked to provide his opinion whether a key factor positively or negatively influence the success of IT integration. By taking the average of these opinions, the influence is depicted with a graphical gauge whether a key factor has positive (green) or negative (red) influence on the success of IT integration. In case, it is unsure whether a key factor has a positive or negative influence, the pointer in graphical gauge indicates the color yellow. In Appendix E2, the descriptions of key performance indicator quality for each key factor is included in this thesis.

6.1.2.1 Existence of as-is enterprise architecture

Phase 1: IT Strategy	Focus area: Business/IT Alignment
Describing the architecture of an organization aims primarily to improve the effectiveness or efficiency of the business itself. This includes innovations in the structure of an organization, the centralization of business processes, the quality and timeliness of business information, or ensuring that budget on Information Technology can be justified. An Enterprise Architecture program provides precise, high-quality information to respond to the forces of change and to make better decisions.	

6.1.2.2 Understand and communicate clear business strategy to the organization

Phase 1: IT Strategy	Focus area: Business/IT Alignment
Communicating a clear business strategy to the organization, results in delivering high-quality, timely information (e.g. determining IT risks and impacts) for the IT organization.	

6.1.2.3 Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats

Phase 1: IT Strategy	Focus area: IT Organization
Proactive performing enables IT executives to effectively gauge IT risks early and deal with IT issues more efficiently. IT executives should not wait to prepare and improve their IT environment for a potential merger, even if this is not imminent, which enhances the integration quality of IT during a merger.	

6.1.2.4   Assessment of legal aspects of the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
Both organizations will strengthen the negotiation positions, which results in enhancing the quality of for example valuable deal outcome.	

6.1.2.5   Due Diligence procedures and structure to analyze the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
With the amount of time derived from the level of breadth and depth, better due diligence results will be generated.	

6.1.2.6   Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization

Phase 2: Due diligence	Focus area: Application
Describing the application architecture of an organization aims primarily to improve the effectiveness or efficiency of the organization itself. This includes innovations in the structure of an organization, the centralization of business processes, the quality and timeliness of business information, or ensuring that budget on Information Technology can be justified.	

6.1.2.7   Establish program management and integration organization to manage integration activities

Phase 3: Merger integration planning	Focus area: Manage project and stakeholders
Program Management tools can be used to support the program management processes, in order to enhance the quality of the merger integration effort.	

6.1.2.8 Manage and integrate corporate culture of both organizations

Phase 3: Merger integration planning Phase 4: Integration	Focus area: Manage project and stakeholders
During a merger, the workforce is asked to perform in new ways. Supporting the performance of people with the right content and training increases the quality of merged organization.	

6.1.2.9 Engagement of key stakeholders and establish strong leadership to support the merger integration

Phase 3: Merger integration planning Phase 4: Integration	Focus area: Manage project and stakeholders
A strong leadership determines which projects are mandatory in order for the merged organization to achieve their objectives. These objectives enhance the quality of the merger.	

6.1.2.10 Focus first on integration, business initiatives will be put on hold during merger integration.

Phase 4: Integration	Focus area: Generic
Management on business initiatives results in prioritization, which is critical to achieve quick-wins initiatives.	

6.1.3   Performance indicator: Cost

In this subsection, key factors related to performance indicator *cost* will be described. Also here, during interviews with experts of the second group, each expert was asked to provide his opinion whether a key factor positively or negatively influences the success of IT integration. By taking the average of these opinions, the influence is depicted with a graphical gauge whether a key factor has positive (green) or negative (red) influence on the success of IT integration. In case, it is unsure whether a key factor has a positive or negative influence, the pointer in graphical gauge indicates the color yellow. In Appendix E3, the descriptions of key performance indicator cost for each key factor is included in this thesis.

6.1.3.1   Existence of as-is enterprise architecture

Phase 1: IT Strategy	Focus area: Business/IT Alignment
Developing blueprints of an organization takes effort of the IT team. For example, creating a database that contains all applications by location, functions, primary business users, interfaces and, the policies and procedures they supported has impact on the budget of the IT organization. On the other hand, developing blueprints requires specific skills of the IT team and if these skills are not present, external staff needs to be hired. These staff puts heavy demands on budget.	

6.1.3.2   Understand and communicate clear business strategy to the organization

Phase 1: IT Strategy	Focus area: Business/IT Alignment
After communicating and understanding the business strategy, the IT organization can decide how to allocate the IT budget towards those IT investment opportunities that will support the business strategy.	

6.1.3.3   Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats

Phase 1: IT Strategy	Focus area: IT Organization
The IT organization understands the cost of ownership and can decide how to allocate the IT budget towards those IT investment opportunities.	

6.1.3.4 Assessment of legal aspects of the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
Organizations with a strong negotiation position, has a positive influence on pricing and sales conditions.	

6.1.3.5 Due Diligence procedures and structure to analyze the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
Using the information provided by the target organization results in an outcome to evaluate the integration costs and to identify possible cost savings.	

6.1.3.6 Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization

Phase 2: Due diligence	Focus area: Application
Because an application architecture program enables organizations to reduce duplication and inconsistencies in information, they can dramatically improve Return on Investment for future Business and IT implementations.	

6.1.3.7 Establish program management and integration organization to manage integration activities

Phase 3: Merger integration planning	Focus area: Manage project and stakeholders
Assigning a full-time IT manager to oversee the IT integration and appointing a dedicated IT integration team puts heavy demands on budget. Furthermore, if the assigned staff does other projects, external staff needs to be hired to support the IT integration.	

6.1.3.8 Manage and integrate corporate culture of both organizations

Phase 3: Merger integration planning Phase 4: Integration	Focus area: Manage project and stakeholders
Jobs, roles, and reporting structures will change. This will cause people to become distracted, to become less efficient and productive than they were before. Organizations can reap significant financial benefits, if they can decrease the duration of inevitable dip in productivity.	

6.1.3.9 Engagement of key stakeholders and establish strong leadership to support the merger integration

Phase 3: Merger integration planning Phase 4: Integration	Focus area: Manage project and stakeholders
The engagement of key stakeholders and establishment of a strong leadership decrease the duration of the integration, because of speeding up the decision making progress. This positive influence on the duration will decrease project costs, because speed is value when it comes to mergers.	

6.1.3.10 Focus first on integration, business initiatives will be put on hold during merger integration.

Phase 4: Integration	Focus area: Generic
Prioritize and align business initiatives that contribute most revenue and cost synergies. For example, retire duplicate managerial staff or eliminate contractors to support financial objectives.	

6.1.4 Performance indicator: Business value

In this subsection, key factors related to performance indicator *business value* will be described. Also here, during interviews with experts of the second group, each expert was asked to provide his opinion whether a key factor positively or negatively influences the success of IT integration. By taking the average of these opinions, the influence is depicted with a graphical gauge whether a key factor has positive (green) or negative (red) influence on the success of IT integration. In case, it is unsure whether a key factor has a positive or negative influence, the pointer in graphical gauge indicates the color yellow. In Appendix E4, the descriptions of key performance indicator business value for each key factor is included in this thesis.

6.1.4.1 Existence of as-is enterprise architecture

Phase 1: IT Strategy	Focus area: Business/IT Alignment
Developing a baseline of the current IT environment can support IT executives to identify gaps that need to be filled to improve the performance of the IT organization.	

6.1.4.2 Understand and communicate clear business strategy to the organization

Phase 1: IT Strategy	Focus area: Business/IT Alignment
For (IT) employees, it is vital to know what the organization wants to achieve. Therefore, IT and business strategies should complement and support each other, in order to deliver business value.	

6.1.4.3 Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats

Phase 1: IT Strategy	Focus area: IT Organization
An evaluation of the IT baseline enables the IT organization to act quickly to capture value and to improve business performance.	

6.1.4.4 Assessment of legal aspects of the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
The dominance of the two organizations during negotiations has a major positive impact of the return on investments.	

6.1.4.5 Due Diligence procedures and structure to analyze the target organization

Phase 2: Due diligence	Focus area: Manage project and stakeholders
Using the information provided by the target organization, value creation opportunities are identified.	

6.1.4.6 Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization

Phase 2: Due diligence	Focus area: Application
The description of the application architecture should enable easy communication of all fundamental aspects of the organization, and make it possible to oversee the consequences of certain choices.	

6.1.4.7 Establish program management and integration organization to manage integration activities

Phase 3: Merger integration planning	Focus area: Manage project and stakeholders
The structure and objectives established eliminate the duplication of work, which enhance the value to the business.	

6.1.4.8 Manage and integrate corporate culture of both organizations

Phase 3 & 4: Merger integration planning & Integration	Focus area: Manage project and stakeholders
Integrating the corporate culture of both organizations reinforced the business value of the integrated organization.	

6.1.4.9 Engagement of key stakeholders and establish strong leadership to support the merger integration

Phase 3 & 4: Merger integration planning & Integration	Focus area: Manage project and stakeholders
For a leadership, it is important to take a hands-on approach to resolving issues and to removing roadblocks, but a hands-off approach with respect to execution. Having key stakeholders and a strong leadership working on the integration adds significant business value to the merged organization.	

6.1.4.10 Focus first on integration, business initiatives will be put on hold during merger integration.

Phase 4: Integration	Focus area: Generic
Consider the "business-as-usual" projects and list of "quick-win" initiatives to meet early synergies.	

6.2 Analysis

The previous subsections described on how key factors could influence the success of IT integration. The second subsection of this chapter presents an overview of the interview results in order to provide an answer to the third sub-research question:

> *RQ3   How can key factors influence the success of IT integration?*

Based on the ranking of the critical success factors in each phase in the previous chapter, each interviewee was asked how these factors are related to performance indicators 'time', 'quality', 'cost', and 'business value'. In Appendix E, the descriptions of the four key performance indicators for each key factor is included in this thesis.

For performance indicator ´time´, one key factor has been indicated as negative: "manage and integrate corporate culture of both organizations" (ID 17). Two key factors have been indicated as negative for performance ´cost´: "existence of as-is enterprise architecture" (ID 1) and "establish program management and integration organization to manage integration activities" (ID 16). For the same performance indicator (cost), one key factor is indicated as neither positive nor negative: "manage and integrate corporate culture of both organizations" (ID 17).

Although the interview results sound obvious regarding the opinions of experts whether a key factor positively or negatively influences the success of IT integration, two of three key factors are related to focus area "manage project and stakeholders", which are indicated as negative. From the expectation of the researcher, the opinions of the experts provide a confirmation about the minimum quantity of key factors that are indicated as negative.

Summarized, most key factors have been indicated as positive. IT executives should pay much attention to these key factors, which positively influence the success of IT integration, to increase the likelihood of a successful integration of IT during mergers and acquisitions. Likewise, IT executives should pay attention to the key factors, which are indicated as negative, to avoid further potential issues. Experienced (external) staff and leadership can provide specific knowledge to successfully integrate IT. These people have been going through uncertain times before, they can identify the keys to success and pitfalls to avoid, and can inspire confidence in the staff.

CONCLUSION

7   CONCLUSION

The settings of two organizations in a merger or acquisition require unique approaches to integrate IT, because both organizations have an existing IT environment. These environments might not be compatible and would need to be changed to be able to support the combined business processes after the merger has taken place.

Research on mergers and acquisitions has been mainly focused on organizational and cultural aspects, while many mergers and acquisitions seem to fail to achieve their expected objectives. As today's organizations seem to be dependent on their IT assets, failure to integrate those assets can lead to merger and acquisition failure. Literature suggests that success or failure of IT integration is often a major factor that determines the success of a merger or acquisition. Therefore, this research explores the literature and practical experience in the area of mergers and acquisitions from an Information Technology perspective. In this chapter, the findings concerning the main research question and sub-research questions will be explained. The main research question in this thesis is defined as:

What are during a merger or acquisition key factors for the successful integration of Information Technology?

The main research question will be answered based on the sub-research questions. The sub-research questions are in a logical sequence and will ultimately result in a contribution to the knowledge about the influence of IT integration success during mergers and acquisitions.

In chapter 3, a 'merger' and an 'acquisition' as well as 'IT integration' has been discussed in order to provide the reader an understanding of these concepts. The first sub-research question is defined as:

RQ1   What is the current scientific knowledge about mergers and acquisitions, IT integration and the relation between them?

Mergers and acquisitions has been increasingly studied in scientific literature in response to the rise in merger and acquisition activities. These contributions has placed a significant amount of efforts on exploring the motives of organizations engaging in merger and acquisition activities. Besides, financial aspects and strategic objectives such as increasing market share or enhancing competitive advantage in mergers and acquisition are broadly discussed in literature. Although an understanding of the role of IT in mergers and acquisitions is still very scarce, a literature study has been performed to find out what mergers, acquisitions, and IT integration are and which approaches and types can be distinguished.

Furthermore, a combination of earlier discussed theories on mergers and acquisitions and IT integration are presented in chapter 3 into a graphical overview (Figure 6), for describing and explaining the relationship between IT integration in mergers and acquisitions. These theories resulted into four relations. The first relation concerns the four merger and acquisition approaches: absorption, symbiosis, preservation, and holding as part of the three IT integration types: complete IT integration, partial IT integration, and IT co-existence (Figure 7). The second relation concerns the three IT integration types as part of the four IT integration approaches: renewal, take-over, standardization, and synchronization (Figure 8). The third relation concerns the four merger and acquisition approaches as part of the three levels of IT integration: business level, application level, and technological level (Figure 9). The fourth relation concerns the mapping of mergers and acquisitions types (horizontal, vertical backward, vertical forward, market extension, product extension, and conglomerate) as part of the four approaches of merger and acquisition approaches (Figure 10).

In literature, the process of a merger and acquisition is described differently and does not formally deal with the question of the starting point of a merger and acquisition (RQ2-a). Therefore, a literature study is performed to address the different phases to the field of IT integration during mergers and acquisitions. Moreover, different focus areas are important to consider during IT integration (RQ2-b). For the second sub-research question, the researcher conducted 11 in-depth interviews with experts, who are experienced and knowledgeable in the field of IT integration during a merger or acquisition. A literature study about the process of a merger and acquisition, relevant focus areas which IT executives must consider, and 11 in-depth interviews served as input for the second sub-research question:

> *RQ2   What factors influence the success of IT integration, during a merger or acquisition?*
>
>   *a.   For each phase of the merger and acquisition process, what factors influence the success of IT integration?*
>
>   *b.   For each focus area, e.g. data, applications, infrastructure, what factors influence the success of IT integration?*

In order to discuss the differences and similarities of the phases during mergers and acquisitions, three distinct approaches were compared to each other. This resulted in four different phases, which are defined as 'IT Strategy', 'due diligence', 'merger integration planning', and 'integration' (subsection 4.1.2). These four phases created the first dimension of the IT integration framework. Furthermore, eight focus areas are addressed in order to create the second dimension of the IT integration framework. These two dimensions are discussed in chapter 4, which resulted in the IT integration framework, depicted in Figure 14 below. This framework has been created by using the Design Research Methodology of Vaishnavi and Kuechler (2004) and was used for describing and categorizing critical success factors that influence IT integration during mergers and acquisitions. The framework could support IT executives to be well prepared in order to integrate IT successful during a merger and acquisition.

Beside literature, interviewees were questioned to answer the second sub-research question. This resulted in a total of 25 critical success factors (Appendix D), concerning the success of IT integration during a merger or acquisition. At the start of each interview in the first interview group, the experts were asked to validate the IT integration framework and to identify critical success factors per phase and focus area. The experts in the second group were asked to validate and rank the identified critical success factors as well the validation of the mapping of these factors in the IT integration framework.

The figure below depicts the IT integration framework with the mapping of the identified critical success factors. The ID of each factor corresponds to the numbering of the critical success factors as mentioned in chapter 5, which are depicted in blue. Furthermore, three critical success factors, which are not related to a focus area, are mapped in the row called "generic" depicted in green.
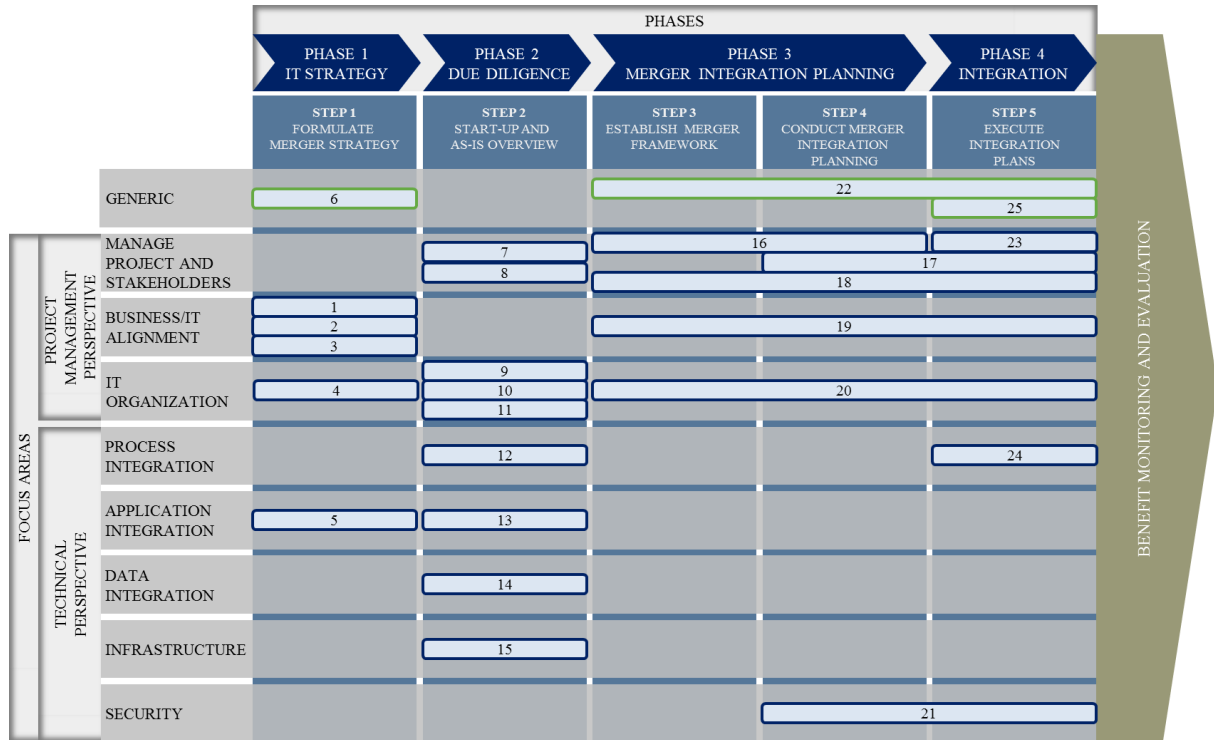

Figure 14 - Critical success factors mapped in the IT integration framework

If an organization will be successful in integrating their IT, awareness should take place on these 25 factors in order to deliver an optimal IT integration product, "to strengthen the capabilities of the merged organization, and place the organization in a better competitive position" (Robbins & Stylianou, 1999). But in what way does these factors influence the success of IT integration? The in-depth interviews with the experts also served as input for the third sub-research question:

RQ3   How can key factors influence the success of IT integration?

Merger and acquisition has long been a critical growth driver for many businesses. In the current environment, corporate mergers face even more pressure to deliver quick payback. Considering that the majority of merger and acquisition transactions fail to deliver their promised business value, it is important to mitigate the failure inherent in a merger. Therefore, each interviewee was asked how key factors could influence the success of IT integration, based on performance indicators 'time', 'quality', 'cost', and 'business value' (Appendix E). From these results can be concluded that most key factors have been indicated as positive. Three key factors has been indicated as negative, from which one key factor for performance indicator 'time' and two key factors for performance indicator 'cost'. For the same performance indicator (cost), one key factor is indicated as neither positive nor negative: "manage and integrate corporate culture of both organizations". IT executives should pay attention to these key factors, which negatively influence the success of IT integration, to avoid further potential issues. Likewise, IT executives should pay attention to the key factors, which are indicated as positive, to increase the likelihood of a successful integration of IT during mergers and acquisitions.

After the explanation of the research design and answering the three sub-research questions, the main research question can be answered. In the next chapter recommendations are provided, which will increase the success of IT integration during mergers and acquisitions.

What are during a merger or acquisition key factors for the successful integration of IT?

In the previous chapters, literature about mergers, acquisitions, and IT integration was studied. Subsequently, interviews with experts of the first group were conducted and resulted together in a list of critical success factors, which are mapped in the IT integration framework (Figure 14). In chapter 5, the results are described, extracted from interviews with experts of the second group, which resulted in a list of key factors:

1. Understand and communicate clear business strategy to the organization;

2. Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats;

3. Focus first on integration, business initiatives will be put on hold during merger integration;

4. Assessment on legal aspects of the target organization;

5. Manage and integrate corporate culture of both organizations;

6. Establish program management and integration organization to manage integration activities;

7. Engagement of key stakeholders and establish strong leadership to support the merger integration;

8. Existence of as-is enterprise architecture;

9. Assess as-is application architecture of the target organization to understand differences and to what extend target application architecture can be leverage into the new organization; and,

10. Due Diligence procedures and structure to analyze the target organization.

In Table 5-5, the overall top 10 is provided, included with the scores of the ranking. This table shows that organizations should incorporate mergers and acquisitions in their IT Strategies to realize the maximum value from merger and acquisition transactions.

RECOMMENDATIONS

8   RECOMMENDATIONS

Four key themes that play an important role must be considered by IT executives to increase the likelihood of a successful integration of IT during mergers and acquisitions. This chapter will address four of these recommendations, which are based on an analyses of identified critical success factors. For example, key words like 'as-is', 'to-be', 'communication', 'project management and integration organization' were used to describe the following recommendations.

Project management approach

Within a merger and acquisition, several projects have to be coordinated and performed to achieve the desired synergies. Accommodating the significant increase of task complexity during IT integration in mergers and acquisitions, key point is to perform these projects from a project management approach. The complexity of this task requires engagement of key stakeholders and a strong leadership, which support the merger integration. Merger and acquisition efforts should be steered through mobilizing a program management office and integration organization, in order to ensure interest from both organizations. These two staff functions should fulfill tasks, such as creating a due diligence structure and procedures to analyze the target organization, establish an appropriate level of breadth and depth, and make requests to receive critical data and information from the target organization.

Assessment of as-is situation towards to-be situation

To become ready for a merger and acquisition, IT executives require a clear understanding of the current state, strengths, and most important weaknesses of their current IT organization. Without a clear understanding of the as-is situation before the merger and acquisition, decisions and integration efforts might prove to be failing. An assessment of the current (baseline) environment of Enterprise Architecture components, like data, application, infrastructure, is required in order to guide the integration effort. With these blueprints in mind, for IT executives it is easier to make key decisions on what the target architecture (to-be) will be. Furthermore, an assessment of Enterprise Architecture components of the target organization is required to understand differences between the Enterprise Architectures of both organizations as well as to what extent the target Enterprise Architecture can be leveraged into the new organization. Additionally, as described in chapter 5, an assessment of the maturity of IT capabilities of the target organization is required, to identify areas for maturity level improvement.

Right amount of frequent communication during the integration

Communication is one of the common elements to be successful in post-merger integration (Epstein, 2004). According to Epstein (2004), during the integration, and "particularly at the beginning of the process, communication from senior management must be significant, constant, and consistent". This is supported by Murphy et al. (2008), which states that "a comprehensive communication plan should be developed to ensure clear and consistent messages to both internal and external stakeholders". These communications avoid that certain stakeholders, especially employees, develop their own perceptions of the overall strategic objectives of the merger or acquisition, which are often negative.

Communications need to be based on a realistic assessment of facts, which is especially critical for employees, who are concerned about their jobs (De Camara & Renjen, 2004). Frequent communication is important for the alignment between business and IT, which is critical to make decisions. To win hearts and minds of employees, a process for communicating the status of the merger integration and celebrating success with stakeholders (employees) is required. Moreover, relevant information needed to be communicated, such as communicating business and IT strategy, IT merger guiding principles, and an IT change plan.

Focus on integration, business initiatives on hold

For IT integration, it is important to determine the financial and nonfinancial results that key stakeholders expect. Based on these expected results, clearly articulate the integration objectives. Next, determine the first priorities for the projects or integration roadmap, based on the integration objectives. Integration activities should be prioritized based on operational relevance and return on investment (Murphy et al., 2008). It is important to distinguish between integration and optimization decisions. The latter should be postponed until the integration is complete. Senior management should realize successes, especially early on in the integration process through implementing quick-wins. They should focus on quick-win opportunities to support financial objectives, such as cancel duplicates projects.

DISCUSSION

9 DISCUSSION

This chapter presents a reflection on the research. It addresses all important issues concerning the limitations of the research, which need to be taken into consideration. Furthermore, opportunities for further research are presented in the second part of this chapter.

9.1 Limitations

The IT integration framework has been designed to assist IT executives in the execution of IT integration during mergers and acquisitions. The IT integration framework should provide a structured approach, without providing a detailed process, to general cases of IT integration in a merger and acquisition. Moreover, the framework could also provide a solution for more specific cases, by providing direction to focus areas as specified of integrating IT. However, the scope of this research was limited to IT integration. As part of the IT integration framework, eight focus areas are addressed in this thesis. Although the eight focus areas provides an indication of common areas during IT integration, these focus areas could be expanded with more specific issues. This can include for example more human related, like culture integration or people integration.

Based on the findings in this research, critical success factors are identified from a project management point of view as well as a technical point of view. A research in one of these two views could be an interesting contribution to this subject, due to the limited available literature. As mentioned earlier in this research, theory and model construction about IT integration in mergers and acquisitions is almost non-existent. In this case, the IT integration framework can provide guidance to the IT integration process.

Besides these subjects, there were also some limitations regarding the execution of this research. The interviews were performed with experts from Accenture. This could mean that the results of this research are biased towards the vision of Accenture. Moreover, the total number of experts that was interviewed is rather small. For more support, a larger sample size should be used. This can include among others international experts, project managers, employees of involved organizations, top managers, organizations of varying sizes and different types of organizations. Furthermore, a lot of the identified critical success factors are consistent with scientific and business literature, from which can be assumed that these adverse effects are negligible.

In addition, the interview data represents information collected at only one moment in time. The specific setting of that moment might have affected the answers that were given that moment while a month later the situations changed and internal as well as external circumstances would have shown different results. The interview results, i.e. the list of critical success factors, that can be encountered in a merger provides an indication of common integration problems. The experts in this research indicated that the most important factors have been found, but also indicated that there could be more factors. However, additional factors would be less common and would apply to very specific cases of IT integration in mergers and acquisitions.

9.2 Further research

The scope of this research was limited to mergers and acquisitions. With the global economic situation continuing to hit most organizations, many are divesting non-core or low-performing business lines or functions in an effort to achieve higher levels of business performance. But what may appear to be a straightforward tactic to investment bankers and business strategists often spells stress for the IT organization. A research to disentanglement and divestiture could be an interesting supplementation.

This research used the Design Research Methodology of Vaishnavi and Kuechler (2004) to design the IT integration framework. Future research could focus on the last steps of this design research methodology, which involves the development and evaluation step. For example, implementing the framework in a web-based environment. In addition, it might be possible to test the applicability of the IT integration framework to organizations of different sizes, cultures and operating in other domains. Furthermore, focus areas from a technical perspective such as process integration, data integration, and application integration could be combined into for example focus area 'IT architecture'.

The identified factors in the IT integration framework could be further evaluated with a larger population of different experts to fill the empty cells. Additional factors found in future studies could supplement the IT integration framework. Because many IT integration activities have similarities with IT projects, further research could investigate the relation between the identified critical success factors in this research with critical success factors of IT projects in literature.

The main objective of this research is to provide an answer how to prevent the failure of IT integration and how to increase the (business) value on IT integration, during a merger or acquisition. More specifically, this study focuses on identifying factors that influence the success of IT integration and combine these in a framework. This offers some general insight about the success of IT integration in mergers and acquisitions. Nevertheless, taking into account a specific critical success factor, the factor might deviate significantly in different industries. Further research could address specific industries concerning the critical success factors and investigate the possible differences.

Five experts indicates that an assessment of the Enterprise Architecture (e.g. data, application, and infrastructure) maturity influences the success of IT integration. Further research could investigate to what extent the maturity level of Enterprise Architecture of the merging organizations influences the success of IT integration. Even more specific, subsequent studies could investigate to what extent an IT assessment at the end of a merger has a positive influence on the success of IT integration.

In any case, the literature on IT integration in mergers and acquisitions seems to be limited. Therefore, more research on this perspective could be beneficial towards understanding the aspects that contribute to the success and failure of mergers and acquisitions.

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APPENDIX A: INTERVIEW

Appendix A1 - Interviewees: first group

#	Interviewee	Function	Industry	Years of experience
1.1	Marcel Koers, Accenture Netherlands	Manager - Security	Financial Services, Public Services	15
1.2	Dirk Jan Geertsema, Accenture Netherlands	Senior Manager - IT Strategy and Transformation	Financial Services, Resources	15
1.3	Arthur van de Bovenkamp, Accenture Netherlands	Senior Manager - IT Strategy and Transformation	Resources, Communications	14
1.4	Candice van de Riet, Accenture Netherlands	Partner - Financial Services	Financial Services	11
1.5	Ron Evers, Accenture Netherlands	Senior Manager - Infrastructure Consulting & Outsourcing	Financial Services, Resources	15
1.6	Anke Schlichting Accenture Netherlands	Partner - Financial Services Technology Group	Financial Services	18

Appendix A2 - Interviewees: second group

#	Interviewee	Function	Industry	Years of experience
2.1	Alessandro Cisco, Accenture Italy	Manager, IT Strategy and Transformation	Health, Financial Services	8
2.2	Floris van den Dool, Accenture Netherlands	Security lead Europe, Africa and Latin America and Technology Consulting Lead the Netherlands - Accenture	Financial Services	24
2.3	Paul van der Waay, Accenture Netherlands	Partner - IT Strategy and Transformation	Financial Services	16
2.4	Rutger Kloeten, Accenture Netherlands	Senior Manager - IT Strategy and Transformation, IT Transformation lead for Benelux	Resources, Financial Services, Energy	17
2.5	Jeroen Louman, Accenture Netherlands	Senior Manager - IT Strategy and Transformation	Financial Services	10

Appendix A3 - Introduction email

Dear colleague,

As intern within IT Strategy and Transformation, Maurice van Ommen is working on his thesis about "IT integration during mergers and acquisitions" for the master "Business Informatics" at the Utrecht University.

To get insight what the most important factors are for a successful integration of IT during mergers, and acquisitions, and as part of his research, Maurice would like to do some interviews with SME's on areas like security, infrastructure, and (IT) strategy. You are identified as a SME on one of those areas and it would be great, if you had time for an interview. The interview will confiscate approximately one hour. The main question during the interview is:

What are during a merger or acquisition key factors for the successful integration of IT?

Maurice will contact you to schedule an appointment. Do you have any further questions? Please do not hesitate to contact Maurice via email (maurice.van.ommen@accenture.com) or phone (+31 6 518 783 89).

Yours sincerely,

Arthur van de Bovenkamp
Accenture

Gustav Mahlerplein 90, 1082 MA Amsterdam
P.O. Box 75797, 1070 AT Amsterdam, the Netherlands
NL cell phone: +31 6 13448773
OCS: +31 20 493 8262
Office: +31 20 493 8383

Appendix A4 - Invitation email

Dear <name>,

Earlier you received an email from Arthur van de Bovenkamp, senior manager within IT Strategy and Transformation, which includes an introduction about me. Currently, I'm working on my thesis about "IT integration during mergers and acquisitions" for the master "Business Informatics" at the Utrecht University.

To get insight what the most important factors are for a successful integration of IT during mergers, and acquisitions, and as part of my research, I would like to do some interviews with SME's on areas like security, infrastructure, and (IT) strategy. You have been identified as an SME on one of those areas and it would be great, if you would be able to make some time available for an interview. Therefore, **would you like to participate in this research?** The main question during the interview is:

What are during a merger or acquisition key factors for the successful integration of IT?

The interview will confiscate approximately one hour. After the interview, data will be processed and sent to you for verification.

Should you have any further questions? Please do not hesitate to contact me via email or phone.

Many thanks for your cooperation,

Kind regards,

Maurice van Ommen
+316 51 87 83 89

Appendix A5 - Discussion Guide

In this discussion guide, the structure of the interview is described which was used to interview the experts. The researcher gathered much knowledge to write this thesis through expert interviews. All interviews with experts were audio recorded and notes of key point were taken during the interview, to create a transcript of each interview. After the interview, the results are analyzed in order to draw a conclusion.

The following questions were asked during the interviews. Besides the questions also the objectives, preparation, and a short checklist for each section are presented below.

Objective

The purpose of the interview is fourfold:
- it provides relevant information to learn about the area of expertise of the experts in IT integration during mergers and acquisitions;
- it provides relevant information to validate the IT integration framework;
- it provides relevant information to identify and validate critical success factors of IT integration during mergers and acquisitions; and,
- it provides relevant information in what way key factors influence the success of IT integration during mergers and acquisitions.

Preparation

As preparation the following actions must occur. Print related documents (proposal, thesis, interview protocol).

Arrange:
- scheduling meeting appointment with interviewee;
- printing hand-outs of PowerPoint slides;
- a room with a whiteboard or flap-over;
- a bottle of wine in case of an external interviewee;
- office supplies (pen, paper, and big post its); and,
- recording equipment.

Interview

Part 1: Head (time indication: 5 minutes)
Short introduction of myself

As intern within IT Strategy and Transformation, I'm working on my thesis about "IT integration during mergers and acquisitions" for the master "Business Informatics" at the Utrecht University.
To get insight what the most important factors are for a successful integration of IT during mergers and acquisitions, one-on-one interviews will be conducted with experts who can provide valuable insights. During the interview, the emphasis will be on research questions two and three.

> *What are during a merger or acquisition key factors for the successful integration of Information Technology?*
>
> *RQ1   What is the current scientific knowledge about mergers and acquisitions, IT integration and the relation between them?*
>
> *RQ2   What factors influence the success of IT integration, during a merger or acquisition?*
>
> > *a.   For each phase of the merger and acquisition process, what factors influence the success of IT integration?*
> >
> > *b.   For each focus area, e.g. data, applications, infrastructure, what factors influence the success of IT integration?*
>
> *RQ3   How can key factors influence the success of IT integration?*

First of all, I will explain how the interview will proceed. During the interview, I'll ask about some problems in the area and how these problems can be influenced. For the processing of the results, I would like to record this interview. Do you object to recording? After the interview, the data will be processed and will be sending towards the interviewee, which can verify the findings. The answers are completely anonymous. Do you have any questions? I will turn on the sound equipment and the interview can take place.

Checklist head
- Mutual introduction (write down the name, gender, age, function, market sector, years of relevant work experience, place, and time).
- Indicate the appreciation for the cooperation and explain why it is important for the interviewer.
- Background of the interviewee; check whether information is received and if the context is clear.
- Explain the interview procedure.
- Permission of audio recording.
- Explain the confidentiality of the results.

Part 2: Core (time indication: 50 minutes)

Open questions are asked so that the interviewer gets a clear vision of what the interviewee intended to say. Besides open questions, also closed question are asked in order to receive a confirmation of the interviewee. The lists of questions are not used as a fixed list. Instead it is a guidance to ensure that all interviews are set up in the same manner.

Based on the answers given the questions, the interviewee usually asked a number of follow-up questions to encourage the interviewee to give more information as well as to discuss practical examples to further clarify the topic.

Example:
   Interviewee: "Of course we do not agree with that".

Possible follow-up questions:
   A) Could you tell me something more about that?
   B) What do you disagree?
   C) Who is mentioned with „we"?
   D) ... …

In the first interview group, the aim is to validate the IT integration framework and to identify critical success factors during IT integration in mergers and acquisitions. These identified critical success factors will be discussed per phase and focus area.

Interview questions, group 1:

#	Question / subject
A	**Generic questions**
1	Would you like to introduce yourself, please?
2	What is your experience in merger and acquisition projects? And in the area of IT integration?
B	**Perception on definitions**
3	Discuss definitions: merger and acquisition project, IT integration, IT integration success, critical success factor
C	**Validation of the IT integration framework**
4	Discuss the IT integration framework per dimension
5	How integrate organizations their IT during mergers and acquisitions?
6	Why do organizations choose this approach? Are there alternatives?
7	What aspects are considered during IT integration from a technical point of view?
D	**Identification of Critical Success Factors**
8	What are critical success factors that influence to the success of IT integration during mergers and acquisitions regarding IT Strategy (phase 1)? In which focus area belongs this factor? And for due diligence (phase 2) ? Merger integration planning (phase 3)? And finally, integration (phase 4)?
9	Which three critical issues may feed or contribute to IT integration success?
10	What is in your opinion the main factor to IT integration success?
11	Do you think that a succesful IT integration contributes to the overall success of a merger and acquisition? To what extend?
E	**Evaluation / Measures**
12	Which indicators were used to measure the success?
13	Which key performance indicators (KPIs) are used for the business?
F	**Best practices / Solutions**
14	What do you perceive as a solution to IT integration during mergers and acquisition in general, but also in terms of methods and tools?
15	What have your main lessons been in acquiring and integrating companies?
G	**Case specific questions**
16	Could you please provide one or more client cases with regard to IT integration in merger and acquisition projects?
H	**Case specific questions, based on phases and focus areas**
17	Is there a clear, single **IT Strategy**? If so, who developed the IT Strategy?
18	Did the company execute the **Due Diligence process?** Who executes this? (Lawyer, accountant?)
19	Has the company developed a **merger integration planning**? If so, who? And how? (100-day plan)
20	Who executed the **integration** of **IT?**
21	What, if anything, would the **client** have **done differently…**

In the second interview group, the aim is to validate and rank the identified critical success factors as well as the validation of the mapping of these factors in the IT integration framework. Moreover, the interviewee was asked how each factor is related to performance indicators time, quality, cost, and business value.

Interview questions, group 2:

#	Question / subject
A	**Generic questions**
1	Would you like to introduce yourself, please?
2	What is your experience in merger and acquisition projects? And in the area of IT integration?
B	**Perception on definitions**
3	Discuss definitions: merger and acquisition project, IT integration, IT integration success, critical success factor
C	**Validation of Critical Success Factors, incl. ranking**
4	Discuss and validate the identified critical success factors
5	Please, would you like to rank and score each of the following factors in terms of its degree on importance, ranging from 1 (low) to 5 (high)?
6	And for their level of criticality towards IT integration success, ranging from 1 (extremly critical) to 5 (neither critical)?
D	**Validation of Critical Success Factors, mapped in the IT integration framework**
7	Discuss for each factor whether this factor belongs to the phase and focus area, mapped in the IT integration framework.
E	**Evaluation / Measures**
8	Which indicators were used to measure the success?
9	How are the following factors related to performance indicator time? And to cost, quality, and business value?
F	**Best practices / Solutions**
10	What do you perceive as a solution to IT integration during mergers and acquisition in general, but also in terms of methods and tools?
11	What have your main lessons been in acquiring and integrating companies?
G	**Case specific questions**
12	Could you please provide one or more client cases with regard to IT integration in merger and acquisition projects?
H	**Case specific questions, based on phases and focus areas**
13	Is there a clear, single **IT Strategy**? If so, who developed the IT Strategy?
14	Did the company execute the **Due Diligence process?** Who executes this? (Lawyer, accountant?)
15	Has the company developed a **merger integration planning**? If so, who? And how? (100-day plan)
16	Who executed the **integration** of **IT?**
17	What, if anything, would the **client** have **done differently…**

Checklist core
- Ask open questions.
- Do not lay words in the mouth of the interviewee, do not show approval or disapproval (but be interested).
- Provide a clear transition between the questions.

Part 3: Closure (time indication: 5 minutes)

Checklist closure
- Pronounce the end of the interview.
- Provide room for questions.
- Repeat the procedure for the data processing.
- Thank the interviewee for his cooperation.
- Ask the interviewee if he wants to cooperate in a later phase of the research.
- Ask the interviewee for feedback.

Appendix A6 - PowerPoint slides: interview group 1

Introduction

- Introduction of interviewer

- Background of research

- Objective of the interview

- Thesis: Research Questions

  What are during a merger or acquisition key factors for the successful integration of Information Technology?

  RQ1   *What is the current scientific knowledge about mergers and acquisitions, IT integration and the relation between them?*

  RQ2   *What factors influence the success of IT integration, during a merger or acquisition?*
      a.   *For each phase of the merger and acquisition process, what factors influence the success of IT integration?*
      b.   *For each focus area, e.g. data, applications, infrastructure, what factors influence the success of IT integration?*

  RQ3   *How can key factors influence the success of IT integration?*

- Process of the interview

3

Interview questions are categorized in the following categories…

Main objective:
A. Generic questions

B. Perception on definitions

C. Validation of the IT integration Framework

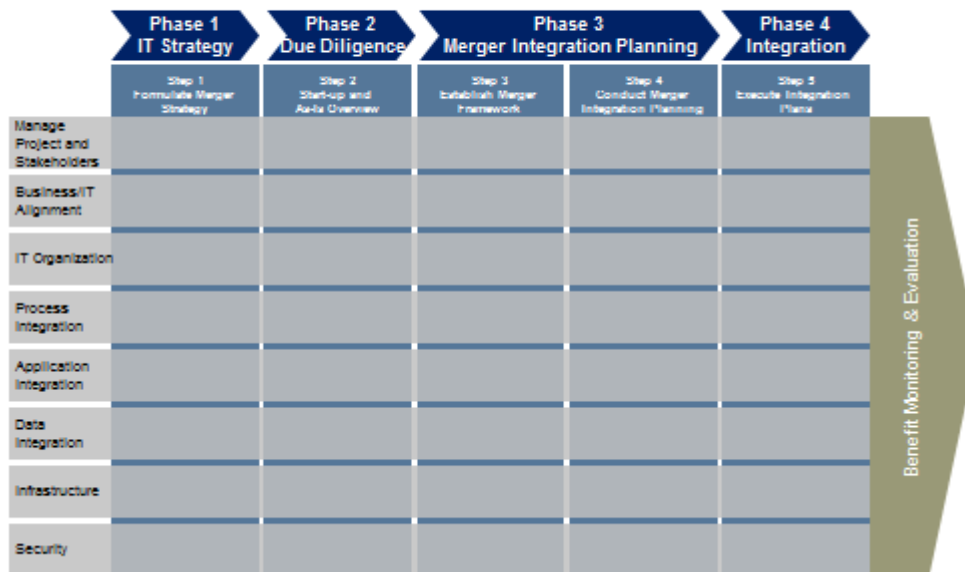D. Identification of Critical Success Factors

E. Evaluation / Measures

Sub objective:
F. Best practices / Solutions

G. Case specific questions

H. Case specific questions, based on phases and focus areas

4

… and are based on the IT integration framework.

	Phase 1 IT Strategy	Phase 2 Due Diligence	Phase 3 Merger Integration Planning		Phase 4 Integration	
	Step 1 Formulate Merger Strategy	Step 2 Start-up and As-Is Overview	Step 3 Establish Merger Framework	Step 4 Conduct Merger Integration Planning	Step 5 Execute Integration Plan	
Data						Benefit Monitoring & Evaluation
Security						
Application						
Process						
Infrastructure						
IT Organization						
Business/IT Alignment						
Manage Project and Stakeholders						

5
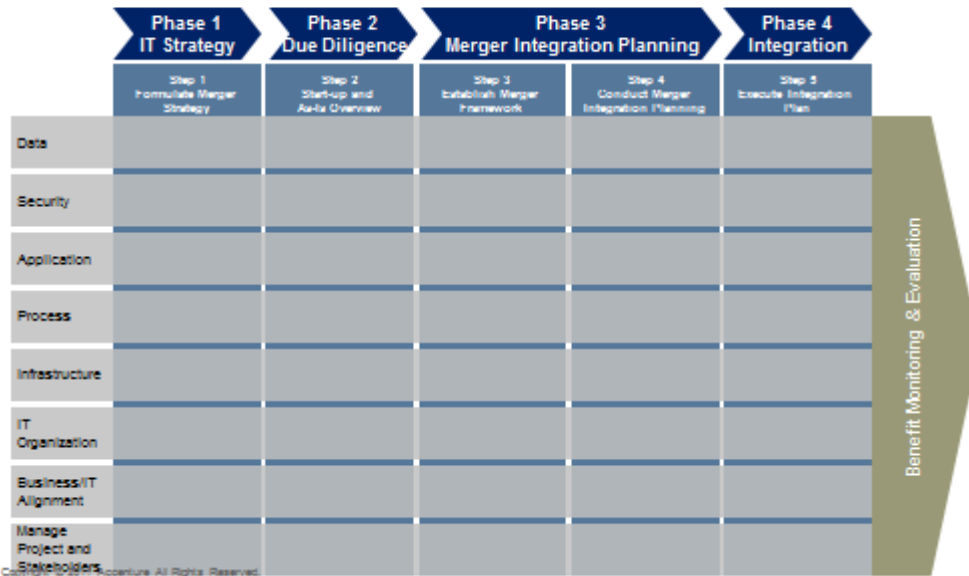
Closure

• Do you have any questions or feedback?

• Procedure for the data processing

• Thanks a lot for your cooperation!

• Contact info:
  – Email address: maurice.van.ommen@accenture.com
  – Phone: +31-(0)20-4938068
 – Mobile: +31-(0)6-51878389

6

Appendix A7 - PowerPoint slides: interview group 2

Introduction

- Introduction of interviewer

- Background of research

- Objective of the interview

- Thesis: Research Questions

  What are during a merger or acquisition key factors for the successful integration of Information Technology?

  RQ1   *What is the current scientific knowledge about mergers and acquisitions, IT integration and the relation between them?*

  RQ2   *What factors influence the success of IT integration, during a merger or acquisition?*
  - a.   *For each phase of the merger and acquisition process, what factors influence the success of IT integration?*
  - b.   *For each focus area, e.g. data, applications, infrastructure, what factors influence the success of IT integration?*

  RQ3   *How can key factors influence the success of IT integration?*

- Process of the interview

3

Interview questions are categorized in the following categories…

Main objective:

A.   Generic questions

B.   Perception on definitions

C.   Validation of Critical Success Factors, incl. ranking

D.   Validation of Critical Success Factors, mapped in the IT integration framework

E.   Evaluation / Measures

Sub objective:

F.   Best practices / Solutions

G.   Case specific questions

H.   Case specific questions, based on phases and focus areas

4

... and are based on the IT integration framework.

	Phase 1 IT Strategy	Phase 2 Due Diligence	Phase 3 Merger Integration Planning		Phase 4 Integration	
	Step 1 Formulate Merger Strategy	Step 2 Start-up and As-Is Overview	Step 3 Establish Merger Framework	Step 4 Conduct Merger Integration Planning	Step 5 Execute Integration Plans	
Manage Project and Stakeholders						Benefit Monitoring & Evaluation
Business/IT Alignment						
IT Organization						
Process Integration						
Application Integration						
Data Integration						
Infrastructure						
Security						

Critical Success Factors (CSFs)

- List of CSFs are identified, during six interviews with SME's:
  - Marcel Koers, Manager - Security NL
  - Dirk Jan Geertsema, Senior Manager - ITST NL
  - Arthur van de Bovenkamp, Senior Manager - ITST NL
  - Candice van de Riet, Senior Executive - TGP Banking Group lead NL
  - Ron Evers, Senior Manager - Infrastructure Consulting & Outsourcing NL
  - Anke Schlichting, Senior Executive - TGP FS lead NL

- *Validation of CSFs*
  - *Ranking of CSFs*
  - *Mapping of CSFs in the IT integration framework*

Closure

- ToDo: validation of CSFs during interviews with five SME's

- Do you have any questions or feedback?

- Procedure for the data processing

- Thanks a lot for your cooperation!

- Contact info:
  - Email address: maurice.van.ommen@accenture.com
  - Phone: +31-(0)20-4938068
  - Mobile: +31-(0)6-51878389
  - http://nl.linkedin.com/in/mauricevanommen

7

In chapter 3, the relationship has been discussed between mergers and acquisitions and IT integration, based on scientific literature. In this appendix, we present an overview of internal citations of publications on IT and mergers and acquisitions, depicted in Figure 15. The aim of this overview is to provide different kinds of publications that specifically addressed the subject of IT integration in mergers and acquisitions. In this overview, we can see for example an internal citation between a publication of Buck-Lew et al. (1992) in Weber and Pliskin (1996).

		Year	B																
			Buck-Lew, et al.	McKiernan & Merali	McKiernan & Merali	Stylianou, Jeffries, & Robbins	Weber & Pliskin	Giacomazzi, et al.	Robbins & Stylianou	Mehta & Hirschheim	Aralanta	Aralanta	Brunetto	Henningsson & Carlsson	Wijnhoven, et al.	Mehta & Hirschheim	Henningsson	Lin, et al.	Henningsson & Carlsson
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Buck-Lew, et al.	1	1992	-																
McKiernan & Merali	2	1993		-															
McKiernan & Merali	3	1995			-														
Stylianou, et al.	4	1996	X			-	X												
Weber & Pliskin	5	1996	X				-												
Giacomazzi, et al.	6	1997					X	-											
Robbins & Stylianou	7	1999	X			X	X		-										
Mehta & Hirschheim	8	2004			X		X	X		-									
Aralanta	9	2005a	X	X	X	X	X	X	X	X	-								
Aralanta	10	2005b		X	X	X	X		X			-							
Brunetto	11	2006	X		X	X	X	X	X				-						
Henningsson & Carlsson	12	2006	X		X	X		X	X	X	X	X		-					
Wijnhoven, et al.	13	2006	X		X	X		X	X						-				
Mehta & Hirschheim	14	2007			X		X	X							X	-			
Henningsson	15	2008	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-		
Lin, et al.	16	2010	X		X	X	X		X									-	
Henningsson & Carlsson	17	2011	X	X	X	X		X	X	X	X	X			X	X			-

Figure 15 - Overview of internal quotes of publications on IT and mergers and acquisitions

APPENDIX C - ENTERPRISE ARCHITECTURE MODEL (ACCENTURE, 2009)
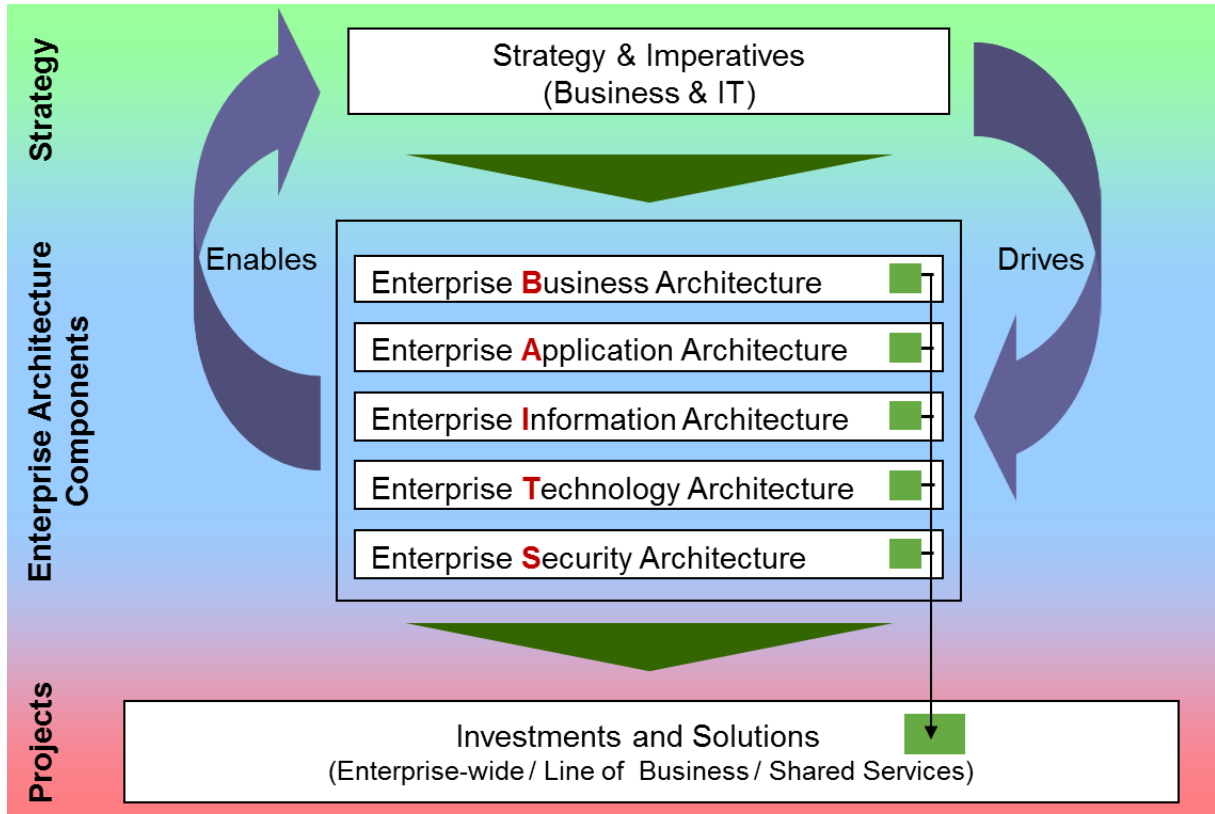
BAITS:
Business Architecture, Application Architecture, Information Architecture, Technology Architecture, and Security Architecture

APPENDIX D - COMPLETE LIST OF CRITICAL SUCCESS FACTORS

ID	Critical Success Factor	Definition	Phase	Focus area
1	Existence of as-is enterprise architecture	In the pre-merger process, the current (baseline) environment, referred as the "as-is" architecture, enterprise architecture blueprints must be in place. In order to guide the merger and acquisition effort, with the blueprints in mind it is easier to make key decisions on what the target architecture (to-be) will be. The organization is able to respond better and more quickly on future mergers and acquisitions. From literature, this factor is endorsed by Worthen (2002), which emphasized to understand the impact that enterprise architecture will have on mergers and acquisitions. It is up to the Chief Information Officer (CIO) to ensure that Information Technology is part of the business discussions and planning front. To provide a practical example, the former CIO and Business-to-Business officer of Procter & Gamble, Stephen David says that once the company has decided to grow via mergers and acquisitions, the first step for the CIO is the come up with a detailed map of the IT architecture and communicate to other executives readiness to do a merger and acquisition. The CIO needs to have explicit knowledge of the enterprise architecture.	IT Strategy	Business/IT Alignment
2	Communicate IT Strategy to business management level and IT organization	To avoid vagueness and discussion in the planning and integration phases, the IT strategy should be documented and communicated from the IT leadership team to business management level and IT organization. In the planning and integration phases, you are dealing with deadlines. For example, before the go-live define the critical point which, once passed, makes a roll-back impossible. This critical point is referred to as "point-of-no-return".	IT Strategy	Business/IT Alignment
3	Understand and communicate clear business strategy to the organization	Clear and effective communication of the business strategy to the organization is necessary to keep the organization in the same direction during the integration process. Based on strategic reasons (e.g., gaining market share, increasing financial growth, eliminating competition), IT executives must have in place an IT integration strategy following the business strategy in order to plan business continuity. This factor is endorsed by Rockart et al. (1996), which emphasizes the alignment of IT strategy with the business strategy as fundamental principle. Furthermore, the CIO must become a formal or informal member of the top management team and senior IT executives should be members of key task forces. IT workforce must be present where the business strategies are debated.	IT Strategy	Business/IT Alignment

4	Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats	An assessment of the IT baseline must be in place in order to have a clear understanding of the current IT situation as well as to evaluate the strengths/weaknesses and opportunities/threats. According to Luftman and Brier (1999), IT executives must be able to outline the strengths and weakness of the technologies in question while understanding the corporate-wide implications. This suggests that IT executives should contribute more positively by identifying the business threats and opportunities available through IT.	IT Strategy	IT Organization
5	Application portfolio alignment with industry standards	Alignment of the application portfolio with industry standards is crucial to gain control and to overcome technical incompatibilities between the IT of the merging partners as well as to optimize the application portfolio to achieve a high application portfolio maturity level. According to Radding (1998), organizations spend up to 50 percent of their IT budgets on application integration. This suggests that during a merger and acquisition the IT organization is often a target for cost reductions. For example, cost reductions can come from establishing standardized enterprise-wide system (Harrell & Higgins, 2002). Furthermore, Popovich (2001) finds that IT organizations should prepare for future mergers and acquisitions by standardizing systems interfaces to deal with infrastructure capacity constraints.	IT Strategy	Application
6	Flexibility to respond to changing laws and regulations	Changing laws and regulations must be taken into account, as compliance has surfaced as one of the major business risks in the wake of the latest financial crisis. Organizations are looking for ways to be independent of this, such as implementing technology systems to manage risks in the field of environment, health and safety according to legal rules. The current business environment has evolved into an environment where regulations on local, regional and international levels are increasing. This suggests conducting a thorough risk analysis to identify issues, which allows the integration team to be in a position to quickly address those issues. Unmanaged issues will have an impact on the efficiency of the organization. Logically, an organization must be prepared for any challenges regarding a merger and acquisition.	IT Strategy	Generic

7	Assessment of legal aspects of the target organization	Collecting information about legal aspects of the supplier requires conducting an extensive assessment of suppliers of the target organization. Objective is to get an understanding in existing service contracts, product licenses, data ownership, contract length, termination clauses, etc. Due diligence embraces not only investigating and validating financial and commercial assumptions, also an assessment of legal assumptions should be included. Sisco (2002) suggests that discovery efforts are kept to vital issues, including contracts and software license agreements and service level agreements, hardware and software ownership, and licensure. Organization that performed an IT due diligence increase the chances of a successful integration experience and realized higher financial value from the merger and acquisition (Accenture, 2002).	Due Diligence	Manage project and stakeholders
8	Due Diligence procedures and structure to analyze the target organization	A structured due diligence approach of procedures is required, to analyze the value, collect information, evaluate the risk and costs from the target organization, establish an appropriate level of breadth and depth for the due diligence process and make requests to receive critical data and information from the target company. The time span of the due diligence depends on the nature, size, and complexity of the merger and acquisition (Angwin, 2001), vary from ten days to two months (Beckmann, 2003). Because the success of a merger and acquisition is related to the amount and quality of due diligence, it is important to clearly define the due diligence objective (Sisco, 2002).	Due Diligence	Manage project and stakeholders
9	Assess as-is business architecture of the target organization to understand differences and to what extent target business architecture can be leveraged into the new organization	Assess how well the current business architecture of the target organization meets the current business requirements. Perform an assessment of organization charts, role descriptions, headcounts by level and departments, to understand differences between the business architecture of both organizations as well as to what extent target business architecture can be leveraged into the new organization.	Due Diligence	IT Organization
10	Evaluate capabilities and maturity of IT of both organizations	It is unclear to what extent IT assets and applications of both organizations can be integrated and leveraged. An assessment of the maturity of IT capabilities of the target organization is required, to identify areas for maturity level improvement. Based on a research study conducted by Accenture, it is critical to have a vision of future IT capability. Insufficient attention to IT integration can lead to a merged organization whose IT capability cannot support the new business processes (Accenture, 2002).	Due Diligence	IT Organization

11	Analyze current and planned project portfolios of both organizations	An overview of current and planned projects of both organizations is required, to understand existing portfolio of projects. Organizations must look at whether the IT portfolio is balanced in terms of for example risk, technology, and payback period. In the context of project portfolio, due diligence means that an organization should establish a documented, quality process for making major decisions regarding project investment (Merkhofer, 2010).	Due Diligence	IT Organization
12	Assess as-is business processes of the target organization to understand differences and to what extent target business processes can be leveraged into the new organization	Assess how well the business processes of the target company are aligned with the business processes of your company, to understand differences between the business processes of both organizations as well as to what extent target business processes can be leveraged into the new organization. This factor is supported by Mack (2006), who states that due diligence is concerned with business processes of the target company. According to Clever (1993), the achievement of synergies through common business processes depends on a successful IT integration. IT plays an important role by enabling the innovative redesign of core business processes, when organizations are dealing with business process redesigns as a result of the merger and acquisition deal (Brancheau et al., 1996). This suggests the importance of integration IT, as in most of today's organizations the processes are enabled by IT systems.	Due Diligence	Process
13	Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization	Assess how well the existing applications of the target organization support the current business processes. Perform an assessment of the application architecture to establish its functional and technical health and cost of ownership, to understand the integration impact of both organizations as well as to what extent target application architecture can be leveraged into the new organization. Due diligence has to do with the assessment of application architecture, to estimate the cost, time, and effort required for integration of the target application architecture. For example, this assessment includes an understanding of the current application architecture of the organization and how changes in business strategy will require changes in the application portfolio, and assess the functional and technical adequacy of each application. As mentioned earlier in this research, organizations fail to realize the objectives of a merger due the lack of an IT integration roadmap. Without an integration roadmap, the application architecture of the merger organization can result in a patchwork of applications. According to Bhatia (2007), integration issues can be better identified by the assessment of the application architecture with reference to the baseline reference architectures.	Due Diligence	Application

14	Assess as-is data architecture of the target organization to understand differences and to what extent target data architecture can be leveraged into the new organization	Assess how well the current data architecture of the target organization meets the current business requirements. Perform an assessment of data management, governance, structure, architecture, master data, quality and security to understand differences between the data architecture of both organizations as well as to what extent target data architecture can be leveraged into the new organization.	Due Diligence	Data
15	Assess as-is infrastructure architecture of the target organization to understand differences and to what extent target infrastructure architecture can be leveraged into the new organization	Assess how well the current infrastructure of the target organization meets the current business demand and how well they are aligned in terms of performance and cost. Perform an assessment of infrastructure architecture to understand differences between the infrastructure architecture of both organizations as well as to what extent target infrastructure architecture can be leveraged into the new organization. As the same applies to the assessment of the application architecture, infrastructure architecture is also part of the due diligence. This assessment can be supported by documentation and diagrams on networks, servers, datacenters, and workplace infrastructure.	Due Diligence	Infrastructure
16	Establish program management and integration organization to manage integration activities	Mobilizing a program management office and integration organization is required to ensure interests from both organizations and to establish the structure, communicate, control, and report around integration activities. This factor is endorsed by business press as well as scientific literature. According to Epstein (2004), a successful merger integration must be demonstrated through the structure, leadership, and establishing of the integration organization. Vester (2002) also promotes the use of a program management. Ensuring a successful merger and acquisition depends on following a disciplined integration program based upon best practices (Vester, 2002). The integration organization should be balanced with members of both organizations, following by a project-management approach. This is supported by business press, which states that successful merger integration should incorporate a program management office (Murphy et al., 2008). Based on a research survey conducted by Accenture, the success of IT integration will be enhanced with a dedicated IT integration team and manager (Accenture, 2002). This manager will be made responsible for managing the overall integration process (Ashkenas et al., 1998).	Merger integration planning	Manage project and stakeholders

| 17 | Manage and integrate corporate culture of both organizations | To know which way a project can be performed, one should understand the current corporate culture of both organizations. It is required to identify gaps between the two corporate cultures in order to create the desired combined culture of both organizations. Based on this culture analysis, the design of a culture change plan can be developed, which consists of a culture integration strategy. An example of a culture integration strategy is that the two organizations operate with separate cultures. During a merger, the new management are asking people to perform in new ways. Managing the "journey" of change involves attention to some human principles, e.g. the people most affected by the change need to feel part of what is going on, as early as possible. Another human principle is that managers need to be able to lead the change in their areas, but they themselves may first need help to understand its full implications. These human principles must be planned to ensure that a workforce both can and will perform over the course of a change journey. Change doesn't happen all at once, but in a sequence of related phases through an almost relentless communication program and other activities designed to build confidence in the new environment.

Despite the fact that human and cultural issues in a merger and acquisition are hard to analyze, organizations recognize the critical importance of this issue (De Camara & Renjen, 2004). According to Weber and Pliskin (1996), culture fit is important, but poorly defined in mergers and acquisitions. Poor culture fit causes employees to spend more time worrying about their jobs rather than about sales and customer satisfaction. To overcome this, maintaining the moral by addressing employee concerns about benefits is important. De Camara and Renjen (2004) states that organizations need to take into account the corporate culture of the new organization. | Merger integration planning & Integration | Manage project and stakeholders |
| 18 | Engagement of key stakeholders and establish strong leadership to support the merger integration | To reduce uncertainty about the future direction of the merged organization, one should ensure that key stakeholders support the program as well as establishing a strong leadership presence, which has the courage to act. In transformation programs, engagement of key stakeholders is seen as fundamental to the success of the merger integration (Kotter, 1995). According to Schneider (2003), failure of mergers and acquisitions is caused by the clash of leadership between the two organizations. Culick (2002) suggests establishing leadership, in the form of an "integration champion", which is critical to merger success. The "integration champion" is usually a person at senior management level, which has the authority to make organizational changes happen (McKersie & Walton, 1991). | Merger integration planning & Integration | Manage project and stakeholders |

19	Align business integration and IT integration in merger integration planning	Critical is the alignment of business and IT during business discussions (e.g. defining functional system requirements) to ensure effective business integration and IT integration. This requires frequent communications between the business and IT during planning and executing of the integration. Business/IT alignment has been a constant struggle for many organizations. Especially the complexity and effort required to achieve business/IT alignment when two organizations are trying to merge into one. Organizations that have achieved alignment can build a strategic competitive advantage to compete in today's fast changing markets (Luftman & Brier, 1999).	Merger integration planning & Integration	Business/IT Alignment
20	Communicate clear IT Merger integration guiding principles to IT stakeholders	IT guiding principles should be reviewed and approved by all key IT stakeholders and communicated to broader IT integration teams. During the merger integration planning and the integration phases, numerous activities are performed and many people are involved. To control everything tightly, Schweiger (2002) suggests articulating guiding principles to help ensure that the basic philosophy underlying the integration is understood. An example of a guiding principle with regard to infrastructure is: IT will provide an integrated, scalable and efficient infrastructure that promotes effective global information access and standards.	Merger integration planning & Integration	IT Organization
21	Set up security management plan concerns security breaches	Organizations during a merger and acquisition are facing the challenge with security. Access to the merged organization environment could be feasible. It is important to set up both technical and procedural protection against intrusion, in order to make sure that the systems are well guarded. Saint-Germain (2005) states that organizations need to deal with a multitude of information security risk, ranging from malicious damage, theft, to natural risks. Therefore, a security management plan is imperative.	Merger integration planning & Integration	Security
22	Establish and communicate integrated IT change plan to key stakeholders	An integrated IT change management plan is required to manage effectively the wide range of changes involved and to ensure that stakeholders are engaged in the change effort. Communication and training are important in change management, to reduce uncertainty of key stakeholders (customers, employees, partners, and suppliers). The management of post-merger integration issues is in many ways common to change management (Maire & Collerette, 2011). Open communications, a clear organizational structure, and a strong leadership will establish a sense of trust (Appelbaum et al., 2000). An important process in change management is training and education provided to employees, users, or suppliers (Ngai et al., 2008). Therefore, it is necessary to comprise change management techniques during the integration phase (Maire & Collerette, 2011).	Merger integration planning & Integration	Generic

23	Set up communication process to manage employee experience	To win hearts and minds of employees, a process for communicating the status of the merger integration and celebrating success with stakeholders (employees) is required. Significant, constant, and consistent communication from senior management is necessary during the post-merger integration, particularly at the beginning of this phase. To be successful in post-merger integration, over-communication is one of the common elements (Epstein, 2004; Murphy et al., 2008). These communications need to be based on a realistic assessment of facts, which is especially critical with employees, who are concerned about their jobs (De Camara & Renjen, 2004).	Integration	Manage project and stakeholders
24	Test integrated business processes with the business	To validate merged business processes and applications, testing activities with the business are required. To test preparation and mitigate risks associated with the merger conversions or initiation of new systems, Epstein (2004) suggests creating processes for dress rehearsals, also referred as pre-run. According to Majumder (2010), organizations need to plan dress rehearsals to ensure a smooth integration based on careful planning. Therefore, it is necessary to complete testing activities to validate the merged applications, conversion programs and business processes in the integrated environment.	Integration	Process
25	Focus first on integration, business initiatives will be put on hold during merger integration.	Focus first on integration, business initiatives will be put on hold during merger integration. According to Murphy et al. (2008), integration activities should be prioritized based on operational relevance and return on investment. During post-merger integration, it is important for senior management to realize successes, especially early on in the integration process through implementing quick-wins. An example of a quick win is merging e-mail systems to demonstrate IT integration is happening.	Integration	Generic

APPENDIX E - KEY PERFORMANCE INDICATORS DESCRIPTIONS

Appendix E1 - Descriptions of key performance indicator 'time'

ID	Critical Success Factor	Description	Phase	Focus area	Influence
1	Existence of as-is enterprise architecture	Especially for large organizations, the board of such an organization nowadays has many complicated issues on their agenda. For instance, the relations between on the one hand the products and services offered by the organization and on other hand their organizational structure. In this case, issues of dealing with the consequences of a merger take a lot of time. Developing Enterprise Architecture blueprints provides insight into the current IT organization for IT executives. These blueprints save time during a merger and provide a valuable baseline for estimating synergies and building a business case for integration. When an organization has defined their Enterprise Architecture, between closing the deal and defining the integration planning, the duration of the merger will be decreased in terms of time.	IT Strategy	Business/IT Alignment	
3	Understand and communicate clear business strategy to the organization	Communicating the business strategy to the organization will reduce the time with leaders to ensure alignment of daily signals to the strategic direction.	IT Strategy	Business/IT Alignment	
4	Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats	An assessment of the current IT baseline of the organization will decrease decision-making effort during identifying areas for development of IT.	IT Strategy	IT Organization	
7	Assessment of legal aspects of the target organization	Understanding the legal aspects with suppliers of the target organization, will decrease the decision-making process during the negotiation in terms of time.	Due Diligence	Manage project and stakeholders	
8	Due Diligence procedures and structure to analyze the target organization	With a defined level of breadth and depth, due diligence can be done rapidly within a structured approach.	Due Diligence	Manage project and stakeholders	

13	Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization	When the target organization has defined their application architecture before the deal is closed, the overall progress of the merger will be decreasing in terms of time, because the assessment of the application architecture can take place immediately.	Due Diligence	Application	
16	Establish program management and integration organization to manage integration activities	With a program management and an integration organization that will work full time on the integration plan, people know on which role they must focus, which enhances the effort needed to complete the merger integration.	Merger integration planning	Manage project and stakeholders	
17	Manage and integrate corporate culture of both organizations	Integration of cultures is a major challenge inside the IT function, because IT executives are by their nature mainly experienced in managing technology. Also people need to be managed effectively as well. To gain experience and wisdom on organizational integration requires a lot of effort for IT executives.	Merger integration planning & Integration	Manage project and stakeholders	
18	Engagement of key stakeholders and establish strong leadership to support the merger integration	The progress of making decisions increases with the engagement of key stakeholders and with a strong leadership, because speed is value when it comes to mergers.	Merger integration planning & Integration	Manage project and stakeholders	
25	Focus first on integration, business initiatives will be put on hold during merger integration	Understanding of currently executed business initiatives results in defining the scope and reducing the duration of the merger integration.	Integration	Generic	

Appendix E2 - Descriptions of key performance indicator 'quality'

ID	Critical Success Factor	Description	Phase	Focus area	Influence
1	Existence of as-is enterprise architecture	Describing the architecture of an organization aims primarily to improve the effectiveness or efficiency of the business itself. This includes innovations in the structure of an organization, the centralization of business processes, the quality and timeliness of business information, or ensuring that budget on Information Technology can be justified. An Enterprise Architecture program provides precise, high-quality information to respond to the forces of change and to make better decisions.	IT Strategy	Business/IT Alignment	
3	Understand and communicate clear business strategy to the organization	Communicating a clear business strategy to the organization, results in delivering high-quality, timely information (e.g. determining IT risks and impacts) for the IT organization.	IT Strategy	Business/IT Alignment	
4	Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats	Proactive performing enables IT executives to effectively gauge IT risks early and deal with IT issues more efficiently. IT executives should not wait to prepare and improve their IT environment for a potential merger, even if this is not imminent, which enhances the integration quality of IT during a merger.	IT Strategy	IT Organization	
7	Assessment of legal aspects of the target organization	Both organizations will strengthen the negotiation positions, which results in enhancing the quality of for example valuable deal outcome.	Due Diligence	Manage project and stakeholders	
8	Due Diligence procedures and structure to analyze the target organization	With the amount of time derived from the level of breadth and depth, better due diligence results will be generated.	Due Diligence	Manage project and stakeholders	
13	Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization	Describing the application architecture of an organization aims primarily to improve the effectiveness or efficiency of the organization itself. This includes innovations in the structure of an organization, the centralization of business processes, the quality and timeliness of business information, or ensuring that budget on Information Technology can be justified.	Due Diligence	Application	
16	Establish program management and integration organization to manage integration activities	Program Management tools can be used to support the program management processes, in order to enhance the quality of the merger integration effort.	Merger integration planning	Manage project and stakeholders	

17	Manage and integrate corporate culture of both organizations	During a merger, the workforce is asked to perform in new ways. Supporting the performance of people with the right content and training increases the quality of merged organization.	Merger integration planning & Integration	Manage project and stakeholders	
18	Engagement of key stakeholders and establish strong leadership to support the merger integration	A strong leadership determines which projects are mandatory in order for the merged organization to achieve their objectives. These objectives enhance the quality of the merger.	Merger integration planning & Integration	Manage project and stakeholders	
25	Focus first on integration, business initiatives will be put on hold during merger integration	Management on business initiatives results in prioritization, which is critical to achieve quick-wins initiatives.	Integration	Generic	

Appendix E3 - Descriptions of key performance indicator 'cost'

ID	Critical Success Factor	Description	Phase	Focus area	Influence
1	Existence of as-is enterprise architecture	Developing blueprints of an organization takes effort of the IT team. For example, creating a database that contains all applications by location, functions, primary business users, interfaces and, the policies and procedures they supported has impact on the budget of the IT organization. On the other hand, developing blueprints requires specific skills of the IT team and if these skills are not present, external staff needs to be hired. These staff puts heavy demands on budget.	IT Strategy	Business/IT Alignment	
3	Understand and communicate clear business strategy to the organization	After communicating and understanding the business strategy, the IT organization can decide how to allocate the IT budget towards those IT investment opportunities that will support the business strategy.	IT Strategy	Business/IT Alignment	
4	Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats	The IT organization understands the cost of ownership and can decide how to allocate the IT budget towards those IT investment opportunities.	IT Strategy	IT Organization	
7	Assessment of legal aspects of the target organization	Organizations with a strong negotiation position, has a positive influence on pricing and sales conditions.	Due Diligence	Manage project and stakeholders	
8	Due Diligence procedures and structure to analyze the target organization	Using the information provided by the target organization results in an outcome to evaluate the integration costs and to identify possible cost savings.	Due Diligence	Manage project and stakeholders	
13	Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization	Because an application architecture program enables organizations to reduce duplication and inconsistencies in information, they can dramatically improve Return on Investment for future Business and IT implementations.	Due Diligence	Application	
16	Establish program management and integration organization to manage integration activities	Assigning a full-time IT manager to oversee the IT integration and appointing a dedicated IT integration team put heavy demands on the budget. Furthermore, if the assigned staff does other projects, external staff needs to be hired to support the IT integration.	Merger integration planning	Manage project and stakeholders	

17	Manage and integrate corporate culture of both organizations	Jobs, roles, and reporting structures will change. This will cause people to become distracted, to become less efficient and productive than they were before. Organizations can reap significant financial benefits, if they can decrease the duration of inevitable dip in productivity.	Merger integration planning & Integration	Manage project and stakeholders	
18	Engagement of key stakeholders and establish strong leadership to support the merger integration	The engagement of key stakeholders and establishment of a strong leadership decrease the duration of the integration, because of speeding up the decision making progress. This positive influence on the duration will decrease project costs, because speed is value when it comes to mergers.	Merger integration planning & Integration	Manage project and stakeholders	
25	Focus first on integration, business initiatives will be put on hold during merger integration	Prioritize and align business initiatives that contribute most revenue and cost synergies.	Integration	Generic	

Appendix E4 - Descriptions of key performance indicator 'business value'

ID	Critical Success Factor	Description	Phase	Focus area	Influence
1	Existence of as-is enterprise architecture	Developing a baseline of the current IT environment can help IT executives to identify gaps that need to be filled to improve the performance of the IT organization.	IT Strategy	Business/IT Alignment	
3	Understand and communicate clear business strategy to the organization	For (IT) employees, it is vital to know what the organization wants to achieve. Therefore, IT and business strategies should complement and support each other, in order to deliver business value.	IT Strategy	Business/IT Alignment	
4	Existence of IT baseline assessment to evaluate the strengths/weaknesses and opportunities/threats	An evaluation of the IT baseline enables the IT organization to act quickly to capture value and to improve business performance.	IT Strategy	IT Organization	
7	Assessment of legal aspects of the target organization	The dominance of the two organizations during negotiations has a major positive impact on the return on investments.	Due Diligence	Manage project and stakeholders	
8	Due Diligence procedures and structure to analyze the target organization	Using the information provided by the target organization, value creation opportunities are identified.	Due Diligence	Manage project and stakeholders	
13	Assess as-is application architecture of the target organization to understand differences and to what extent target application architecture can be leveraged into the new organization	The description of the application architecture should enable easy communication of all fundamental aspects of the organization, and make it possible to oversee the consequences of certain choices.	Due Diligence	Application	
16	Establish program management and integration organization to manage integration activities	The structure and objectives established eliminate the duplication of work, which enhance the value to the business.	Merger integration planning	Manage project and stakeholders	

17	Manage and integrate corporate culture of both organizations	Integrating the corporate culture of both organizations reinforced the business value of the integrated organization.	Merger integration planning & Integration	Manage project and stakeholders	
18	Engagement of key stakeholders and establish strong leadership to support the merger integration	For a leadership, it is important to take a hands-on approach to resolving issues and to removing roadblocks, but a hands-off approach with respect to execution. Having key stakeholders and a strong leadership working on the integration adds significant value to the merged organization.	Merger integration planning & Integration	Manage project and stakeholders	
25	Focus first on integration, business initiatives will be put on hold during merger integration	Consider the "business-as-usual" projects and list of "quick-win" initiatives to meet early synergies.	Integration	Generic	