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**IMPACTS OF COMPANY REORGANIZATION TO ONGOING
ENTERPRISE RESOURCE PLANNING IMPLEMENTATION**

Master's Thesis

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ABSTRACT

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<p>The aim of this thesis was to study how enterprise merger influences the ongoing implementation of an ERP system. The aim of the thesis was to find out the most critical factors in the implementation, which lead to a successful ERP implementation.</p> <p>As a main research method, the work uses exploratory case study, which was carried out by 14 semi-structured interviews in a Finnish oil company. The respondents were chosen from different business units, both from the business side and from the company implementing the ERP system, in order to obtain the widest possible knowledge from the interviews.</p> <p>According to the research results, the most critical issues in post-merger ERP implementation are the integration strategy and planning, the implementation team, the technical factors and the implementation project process. The interviews provided more detailed practical research results, and the interview results could be divided into three categories: overall merger activities, system implementation details and to the IS integration process. In addition, it was found that defining the boundaries of the legal companies in the ERP system was not the most challenging part in contrast to the preliminary data, but how two different business areas can be managed within one legacy company inside the enterprise resource planning system.</p>	

TIIVISTELMÄ

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<p>Tämän diplomityön tavoitteena oli tutkia, kuinka yritysfuusio vaikuttaa samaan aikaan tapahtuvaan toiminnanohjausjärjestelmän implementointiin. Työssä pyrittiin selvittämään kriittisimmät seikat implementoinnissa, joihin keskittymällä pystytään toteuttamaan onnistunut toiminnanohjausjärjestelmän implementointi.</p> <p>Päätutkimusmenetelmänä työ käyttää eksploraatiivista tapaustutkimusta, joka toteutettiin tekemällä 14 puolistrukturoitua haastattelua yhdessä suomalaisessa öljy-yrityksessä. Haastateltavat pyrittiin valitsemaan työhön tasapuolisesti eri liiketoimintayksiköistä, sekä liiketoiminnan puolelta että toiminnanohjausjärjestelmän implementoinnin toteuttavan yrityksen puolelta, jotta työhön saatiin mahdollisimman laaja vastauskirjo.</p> <p>Tutkimustulosten mukaan tärkeimmät seikat yritysfuusion jälkeisessä ERP implementaatioissa ovat integraatiostrategia ja suunnitelma, implementointitiimi, tekniset seikat sekä implementointiprosessi. Haastattelujen avulla saatiin tarkempia käytännön tutkimustuloksia ja esiin nousseet asiat pystyttiin jaottelemaan kolmeen kategoriaan: yleisiin yritysfuusioon liittyviin toimintoihin, informaatiojärjestelmän implementoinnin yksityiskohtiin ja IS-integraatioprosessiin. Lisäksi havaittiin, että legaaliyhtiöiden rajojen määrittäminen ERP järjestelmässä ei ollut alustavista tiedoista poiketen haastavin osuus, vaan se miten kahta erilaista liiketoiminta-aluetta pystytään hallitsemaan yhden legaaliyhtiön sisällä toiminnanohjausjärjestelmässä.</p>	

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Geneva, 7th of October 2018

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1 INTRODUCTION

Business is a dynamic activity where the company's business environment can change for many reasons. In that case the current ownership of the company and structure may be inappropriate and it may even jeopardize the company's competitive position in the business environment. In a situation like this, the company's structure may need to be changed. (Immonen, 2015, s. 17) Restructuring, along with reconfiguration, is a part of reorganization, which is always present in companies' lives. These changes may appear in the forms of technological change, new work methods, mergers, acquisitions or other ways that reorganize the company's structure. (Gilson, 2011) Different kinds of structural changes and business arrangements are part of strategic, tactical and operational ways for companies and their owners to secure the company's position in a competitive environment. (Immonen, 2015, s. 11) Most of the time these arrangements are made in the hope of better opportunities for companies to achieve better results (Lundqvist 2012, s. 3).

In some industries it is seen that the pressure to change is higher than in other industries. This pressure can come from various places; social, economic, political and environmental pressure, for example, can urge companies to reorganize. Particularly in industries where core activities are based on fossil raw materials, like oil and gas industry, are very vulnerable to external pressures that seek to change their business into a more environmentally friendly direction. Part of this pressure can come from different laws and obligations that companies need to comply, and for example from environmentally conscious customers (EU climate and energy framework, 2017).

Currently, the EU obligations state that in Finland the greenhouse gas emissions need to decrease by at least 21 percent by 2020 compared to 2005 levels. The goal for 2030 is even higher: at least 40 percent cut from the 1990 levels and at least a 27 percent share for renewable energy in the national energy consumption. (EU climate and energy framework, 2017) The Finnish Government's goal of increasing

renewable energy is even more ambitious since the plan is to have the end usage of renewable energy at a 50 percent level by year 2020. The means to achieve this are increasing the usage of biofuels to 30 percent and using an effective energy taxation that supports domestic biofuel production. (Elinkeinoministeriö, 2016) Altogether, these megatrends do not have a positive effect on oil and gas companies' fossil fuel sales and production. Already there are many signs that driving with fossil fuels decreases. An example can be taken from France and Germany, two countries intending to ban the sale of gasoline and diesel cars by 2040. In a business environment like this, the only way for oil industry to survive is to seek growth from renewable fuels and other transportation areas than car traffic, which can be for example aviation and sea transportation. (Matti Lievonen, mtv.fi, 2017) However, changes that affect the company's core business aren't easy, and often they require changes in the company's structure.

This master's thesis specializes in particular to company reorganization in the forms of subsidiary mergers and enterprise resource planning system integrations, and their effects on each other. Post-merger integration (after this PMI), where the merged company is implemented ERP system and business integration wise to the acquiring company, is a crucial point when evaluating whether the merger fails or succeeds in a longer period of time. For a post-merger integration to be successful first pre-merger planning and early decisions for merger strategies needs to be firmly at place and implemented thoroughly. (Lundqvist, 2012, s. 3) However, there is evidence that between 60 and 80 percent of mergers fail, or do not achieve their strategic, operational or financial objectives (Christofi, Leonidou and Vrontis, 2015; Ruess and Voepel, 2012). It is seen that for companies it is much easier to make the merger decision than to plan it throughout and carry it out in a way that fulfills the goals and initial objectives that were set at the time of the merger decision (Lundqvist, 2012, s. 3).

This master's thesis uses a Finnish oil company Neste Oyj as a case company. The case company strives to make a change in its core business and to bring its renewable energy business area under its parent company, instead of having the business area under its subsidiary companies. At the same time, the case company

is also going through a broader enterprise resource planning system (ERP) reform, in where renewable businesses are involved. In this case, the post-merger integration of Neste Oyj and its subsidiary Neste Renewable Fuels is even more crucial, since also the larger company restructuring is at stake.

1.1 Objectives and scope

The framework for this master's thesis lies in the relations and correlations of company reorganization, merger, post-merger integration and ERP system integration, and in their effects on each other. The theoretical part of this master's thesis deals with merger and post-merger integration as a whole, while the empirical part of the work focuses more on subsidiary merger and its effects on ERP integration and its most critical areas. It is important to note, that in the case company subsidiary merger cannot be spoken of without ERP system reform, so these two are tightly linked. More broadly, information systems integration is part of business integration in merger, so the information systems integration is based on a framework of a larger post-merger integration, which is important to understand.

In the case company the ERP system implementation would happen in any case for the subsidiary along with the parent company, regardless of whether or not the reorganization takes place. A merger that happens between subsidiaries in the middle of an ongoing ERP reform means that some of the functions of the subsidiaries have already been implemented and some of them are only planned. It is therefore important to have an overall view of the issues that still require planning and on the other hand to identify the issues that have already been solved. Also time-wise this research is important, since when the ERP implementation for the subsidiary begins, it is important that the project workers have a starting point in the form of key factors that needs to be focused on and that the most critical areas are already known. In an ongoing ERP reform that reshapes the company's structure there is a very strict timetable, which means that when the previous part of the reshape has been completed there is a need to move to the next phase immediately.

The aim of this work is therefore to find a clear set of factors that must be taken into account in particularly at an ERP system implementation that happens at the same time as a company restructuring, compared to a situation where a subsidiary would be implemented to ERP without a merger.

Thus, the first research question on this master's thesis is:

- What are the factors that lead to ERP integration success following a merger?

The effects of subsidiary merger on ERP implementation can be better understood by analyzing the business areas that are implemented, and by identifying the differences in business areas and by reflecting them to the ERP system. Thus the aim of this study is also to point out the changes that merger brings to ongoing ERP implementation. As a whole, identifying the most crucial points in ERP implementation after the merger will help in the aim of identifying the factors that lead to ERP implementation success, so that is this thesis' last subtext research question.

The subtext research questions that are complementary to the main research question are:

- What effects and changes merger has to ongoing ERP implementation?
- What are the most crucial points in ERP integration after merger?

Table 1 Research questions and objectives

Research question	Objective
<i>RQ1:</i> What are the factors that lead to ERP integration success following a merger?	<ul style="list-style-type: none"> • Understanding of ERP and PMI projects as a whole, understanding their drivers, timetables and implementation strategies. • Understanding the scope of the merger inside the whole organization, and the ability to reflect that to the ongoing ERP project.
<i>RQ1.1:</i> What effects and changes merger has to ongoing ERP implementation?	<ul style="list-style-type: none"> • Knowledge of the structures of ERP, and the ability to reflect merger into those structures. • Understanding the differences between business areas in merging companies, and the ability to reflect those differences into ERP.
<i>RQ1.2:</i> What are the most crucial points in ERP after a merger?	<ul style="list-style-type: none"> • Identifying the most crucial points in ERP implementation after merger, which are the foundation and starting point for the actual implementation project.

Due to the broad scope of the work, limitations are to be expected. This study focuses solely on reorganization inside one company in the form of a subsidiary merger into a parent company, so mergers and acquisitions in general are left out in the empirical part. This subsidiary merger is reflected to ongoing ERP reform, so from the different areas of post-merger integration this thesis focuses on post-merger information technology implementation. This means that the other areas linked to post-merger integration, like the areas of cultural, management, human resources change and so on are left out. This study also does not address public sector, as public sector mergers may differ much from the private sector.

The starting point of this study is the compulsory changes in the business operations as a result of a merger, which are reflected to the ERP system, and the analysis of what changes needs to be made in the ERP implementation due to the merger. As a result, in this thesis post-merger business integration is also addressed to a small extent. From system perspective it is assumed that the ERP system adapts to the changes required by the business, not the other way around. Thus, this is also the viewpoint for the whole master's thesis, from business to system integration and implementation. In real life some exceptions to this viewpoint are expected, as none of the systems can fully conform to the terms of the business, so some of the features must be implemented under the terms of the system. Due to the large scope of merger and acquisitions itself, this study also focuses mostly to the oil sector whenever it's possible, especially the empirical part of the thesis.

1.2 Execution of the study

The execution of the thesis consists of three phases. The first phase is a literature review, second phase qualitative interviews and the last third phase the final results. **Figure 1** shows the actual process, timeline and meaning of the different phases of the thesis. All of these three phases together aim to answer the main research question: What are the factors that lead to ERP integration success following a merger?

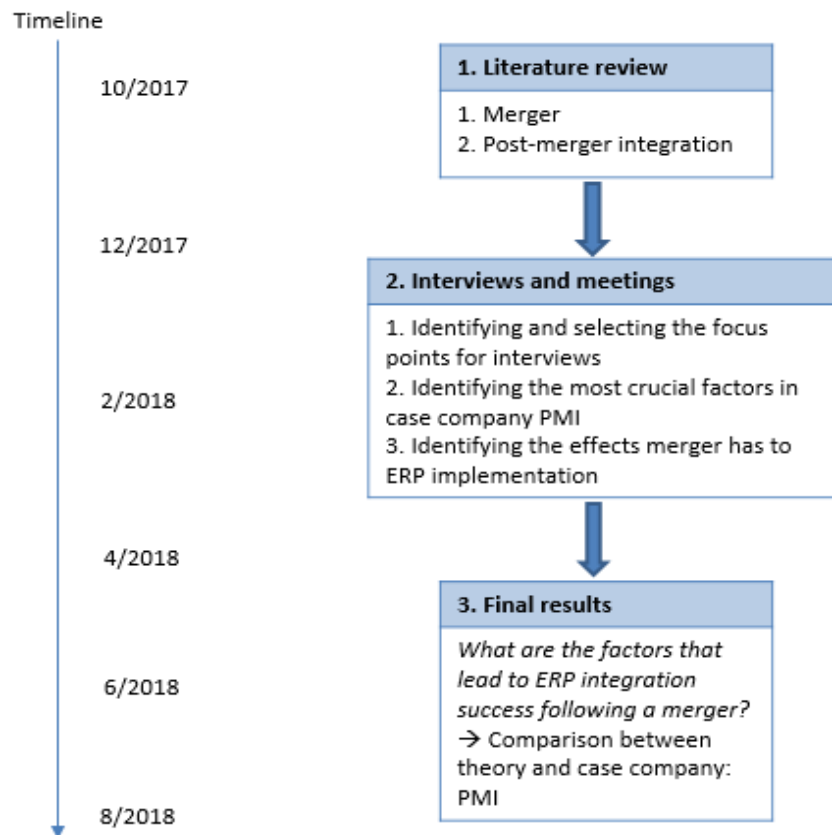


Figure 1 Execution of the study

The first part literature review aims to give theoretical background on mergers generally, as well as introduce ERP integration projects in the context of post-merger integrations. The empirical part of the study consists of qualitative interviews made at one Finnish case company. This phase aims to collect the interviewees' knowledge, experience and perspective to the topic, and that way give examples from real life to add to the theoretical part. As a result, the thesis is able to draw conclusions and answer the research questions.

1.3 Structure of the report

In **Figure 2** is briefly explained the structure of the thesis, in a way that the input and output of each chapter is described.

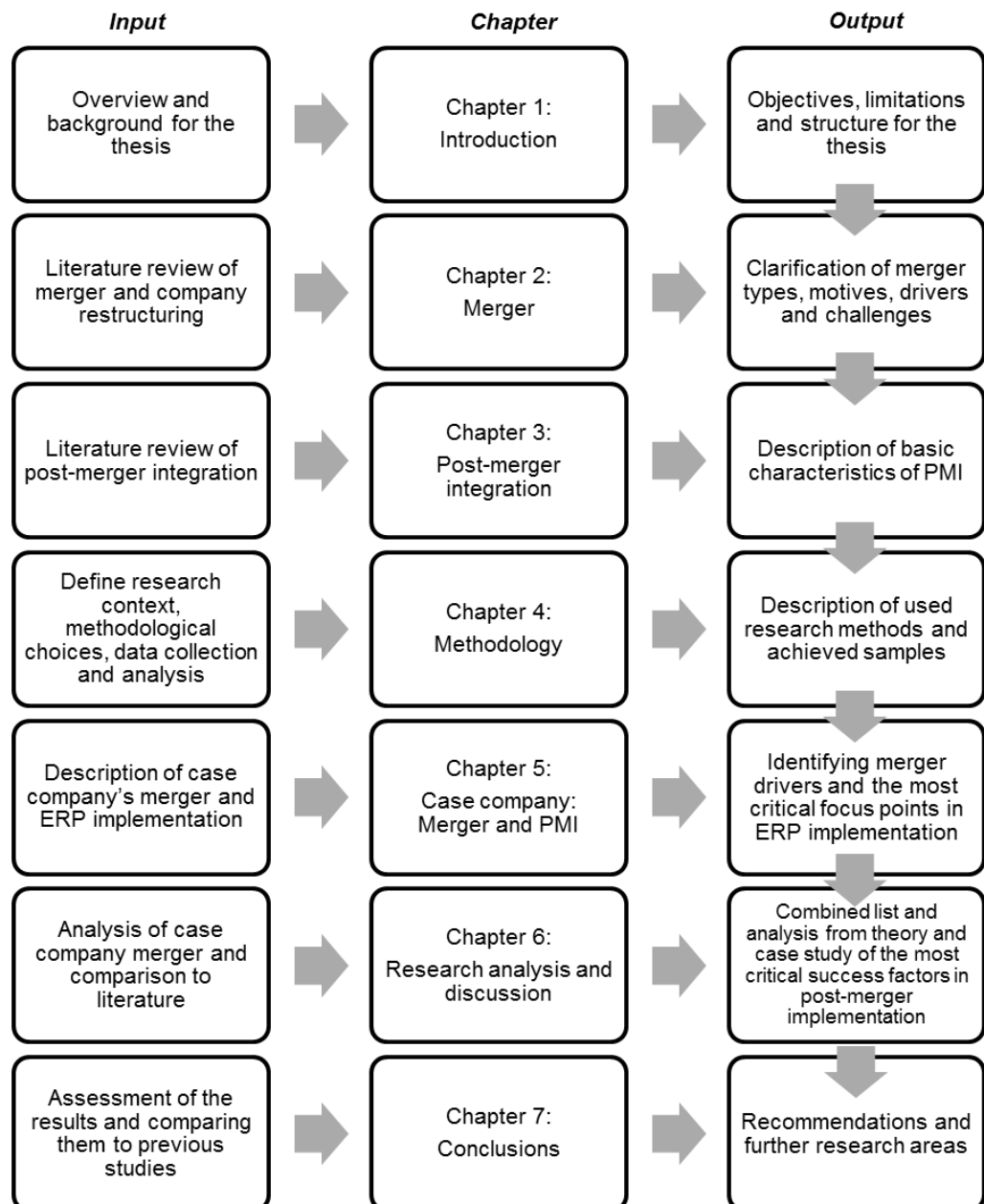


Figure 2 The structure of the thesis

In chapter one, *Introduction*, is briefly described the background of the thesis, and given an overview to the topic. As a result the chapter's output is the objectives, limitations, research questions and description of the structure for the thesis.

Chapter two, *Merger*, on the other hand describes based on literature sources, the different merger types, motives for merger, and the legal merger process, which may affect the later mentioned ERP implementation process. After this literature review of different mergers follows chapter three, which discusses *Post-merger integration*, focusing on information systems and ERP systems integration, with the mention of post-merger business integration. That chapters input is based on literature review, and as an outcome the chapter delivers the basic characteristics of post-merger integration and describes the most critical success factors based from theoretical viewpoint. As a conclusion, together chapters two and three form the theoretical part of this master's thesis.

In chapter four, *Methodology*, the research context, methodological choices and data collection are described briefly. As a result the reader gets a detailed view of the research process. Chapter five, *Post-merger integration in case company*, describes on turn the results from interviews and identifies the most crucial success factors from case company's viewpoint. As a result, in chapter six, *Research analysis and discussion*, the input is the analysis from both theoretical chapters two and three, as well as from the empirical chapter five. The outcome of the chapter six is a combined list and comparison between factors found in previous chapters. Chapter six also provides together with chapter five the answers to the research questions. The last chapter, *Conclusions*, assesses the results and compares them to the previous studies, as well as delivers as an output recommendations and areas for future research.

2 ORGANIZATIONAL CHANGE

This chapter provides a literature review of company restructuring, especially when the restructuring happens in the form of subsidiary merger. The first part of the chapter describes the principles of reorganization and merger generally and the different concepts related to the topic. The second part describes different merger types and third part motives for merger.

2.1 Principles of organizational merger

For companies there are several reasons for reorganization. These reasons are for example a changed nature of business, downsizing, new work methods, new management methods, quality management, technology, mergers and acquisitions, finance related issues, buy outs and statutory and legal compliance issues. Gilson (2011) gives a special weight to technological change, for example enterprise resource planning (ERP), which can be the cause for company restructuring. Also mergers and acquisitions are highly popular, especially subsidiary-parent mergers (Slovin and Sushka, 1998). Overall, in today's business environment change is constant, and companies that refuse to change face the risk of their product lines becoming obsolete. (Gilson, 2011)

When talking about reconfiguration, restructuring and reorganizing, it is important to define the different terms. *Reconfiguration* involves adding, splitting, transferring, combining or dissolving business units without modifying the company's underlying structure. *Restructuring* on the other hand, involves changing the structural archetype around which resources and activities are grouped and coordinated. Companies can for example organize around function, business line, customer segment, technology platform, geography or a matrixed combination of these. A good example of this is a shift from business line-focused organization chart to a functions-focused, for example around engineering, marketing and business development. Corporate restructuring can also involve making dramatic changes to a business by cutting out or merging departments.

Reorganization, in turn, is a catchall term that encompasses the two distinct change processes restructuring and reconfiguration. As a rule it can be said that in reorganization restructure sparingly, and reconfigure more frequently but not so often that chaos reigns. Also clearly defining the scope of change is important, for example in restructurings new culture, practices, processes, and systems are often needed, and in reconfigurations continuity and commonalities are preferable. (Girod and Karim, 2017) Merger of a subsidiary into a parent company can also be labeled under reorganization (Journal of Taxation, 1974).

In law literature merger or legal merger is described as a procedure in which two or more limited companies are merged into one company to which all the assets of the merged companies come but which also meets all the obligations of the merged companies. Similarly, the shareholders of the merged companies become shareholders of the unified company in principle, although this predecessor is not completely unconditional. There are many different merger methods for limited liability companies that are defined in the European Union Directive and in the Companies Act. (Airaksinen, Pulkkinen, Rasinaho., 2010, s. 219-220; Immonen 2015) The Companies Act states (Merger 1§ Airaksinen et al., 2010, s.224):

"A limited liability company (merging company) may merge with another company (the acquiring company), whereby the assets and liabilities of the merging company will be transferred to the receiving company and the shareholders of the merging company will receive the shares in the acquiring company as the merger consideration. The merger counter may also include money, other assets and commitments."

From all of the discontinuation ways for a limited liability company merger is one possibility, which is the same for a public or a non-public company. (Immonen 2015) It can be also said that merger is a different event in different situations. For example, merger is often used to rationalize and streamline the operations of a corporation, since once a subsidiary has been acquired, the merger would enable the subsidiary to associate its operations with the parent company very soon after the acquisition. (Airaksinen et al., 2010, s.216; Immonen 2015, s. 171)

Alternatively, the merger may also discontinue the existence of a subsidiary as a separate company by combining it with the parent company or another group company. In the merger, the acquiring company is not required to continue the business of the merged company, regardless whether this is a subsidiary or merger-acquired rival company whereby the merger can be used as a means of discontinuing the business of the merging company. (Airaksinen et al., 2010, s. 216)

From the point of view of tax legislation, the starting point is that the merger arrangement under the Mergers and Acquisitions Directive does not result in immediate income tax consequences for companies participating in the arrangements or for their owners. The basic idea is the continuity principle and the deferral of tax on capital gains on the next transfer. In taxation also the acquisition costs remain unchanged in the case of corporate restructuring. Taxation legislation does also not give reason for deductible merger losses or taxable merger gains. It also does not affect the treatment of the accounting separation difference when calculating net assets. (EVL 52 b § 1 moment, Vero.fi, 2017)

2.2 Merger types

When talking about merger types for a limited liability companies, there are two main forms: absorption merger and combination merger. The difference between these two is that in absorption merger the receiving company will remain and the other companies will merge into it, while in the case of combination merger all existing companies before the merger are merging companies and the acquiring company is established in the merger. (Airaksinen et al., 2010 s. 239; Immonen 2015) The discontinuation ways for limited liability companies are:

1. *Absorption merger*

- 1.1. *Subsidiary merger*

- 1.2. *Tripartite merger*

2. *A combination merger* (Airaksinen et al., 2010 s. 239; Immonen, 2015)

From previous paragraph it can be seen that subsidiary merger and tripartite merger are subcategories of absorption merger. Subsidiary merger is a special form of absorption merger, where the acquiring company owns beforehand all the shares, stock options and other special rights entitling to shares of the merging companies. Tripartite merger is an absorption merger, where the acquiring company does not give a merger compensation, instead some other party gives it to the merging company. From the point of view of the merging company, the differences in absorption and combination merger are minor. From the point of view of the receiving company, in turn, there are differences, which are largely due to the fact that all the participating companies cease to exist in combination merger, which is in practice more complex than absorption merger in which the identity of one company remains. (Airaksinen et al., 2010 s. 239)

Table 2 Comparison between absorption merger and its subcategory subsidiary merger (Adapted from Immonen 2015, s. 165-167)

Absorption merger	Subsidiary merger
1. The participating companies' governments agree to a merger plan.	1. The participating companies' governments agree to a merger plan. Limited content.
2. The auditor gives an opinion on the plan.	2. The auditor gives an opinion on the plan. Limited content.
3. The plan is announced for registration. Joint notification by participating companies.	3. The plan is announced for registration. Statement by parent company.
4. The plan is approved at the general meeting of the merging company and at the board of directors/shareholders of the receiving company on certain terms if 1/20 of the shares representing the shares are required.	4. The plan is approved by the board of directors of the merging company and at the board of directors/shareholders of the receiving company on certain terms if 1/20 of the shares representing the shares are required.
5. Creditors are called for an announcement.	5. Creditors are called for an announcement.
6. The merger is announced for implementation. Joint notification by participating companies.	6. The merger is announced for implementation. Statement by parent company.
7. The merger comes into force. The merging company will be dissolved. A merger counterfeit is issued. The Board of Directors and the CEO issue a final account to the Shareholders' Meeting.	7. The merger comes into force. The merging company will be dissolved. The Board of Directors and the CEO issue a final account to the Shareholders' Meeting.
8. Final accounts are reported for registration.	8. Final accounts are reported for registration.

When comparing these two merger types, absorption merger and subsidiary merger, subsidiary merger is the most common merger type. The main reason is that the subsidiary merger process is simpler and more flexible as the company doesn't have a minority shareholder. There are also many procedural reliefs, for example the merger plan can be accepted in the merging company with the decision of Board of

Directors, and as a rule, the Board of Directors also decides on the merger in the acquiring company. (Immonen, 2015, s. 165) In other words, parent-subsidary mergers do not entail arm's length bargaining and it does not occur in competitive atmosphere since parent already owns and controls a majority of the stock of their subsidiary. (Slovin and Sushka, 1998) In turn, at absorption merger the merger plan has to be approved always at the general meeting of the merging company. In subsidiary merger the case must be handled at the general meeting of the receiving company only if its shareholders holding at least 1/20 of the company's shares require it. (Immonen, 2015, s. 165) Even in that case the parent can force a parent-subsidary merger and impose transaction terms on minority shareholders by voting its majority shareholding in the subsidiary (Slovin and Sushka, 1998). There is also no merger counterfeit, so no terms are required regarding that. Also, the auditor only needs to make a statement whether the merger is liable to jeopardize the payment of the debt of the receiving company. (Immonen, 2015, s. 165)

Companies that participate in the merger may have different relationships with each other and different growth strategies, according to which merger types can also be grouped. There are four main categories, which are vertical, horizontal, concentric and conglomerate mergers. *Vertical mergers* occur when a buyer-seller relationship exists between the merging companies. (Hough, Haines and Giacomo, 2007) Often these mergers form when the firms operate in the same industry, but in different stages in the operating distribution system. Vertical backward integration happens when a company merges with its supplier or producer, and forward integration on behalf when a company integrates with a retailer or a customer company. (Katyal, 2016) In *horizontal mergers*, the merging companies have identical products or services, and therefore it is also sometimes called capacity consolidation. (Hough et al., 2007; Chatterjee and Brueller, 2015) Often in horizontal mergers the merger happens between direct competitors and hence expands the company's operations in that industry afterwards (Katyal, 2016). Often in vertical mergers the goal is to deal with critical interdependencies whereas horizontal mergers are done for the joint purpose of exploiting economies of scale and scope, decreasing the number of

competitors in the marketplace, for market expansion, entering new businesses and maximizing financial capabilities (Hough et al., 2007; Katyal, 2016).

For *concentric mergers* the main goal is to pursue concentric diversification and thus it involves companies, which share similar technologies or distribution arrangements (Hough et al., 2007). Often in these mergers the potential benefit is high since the merger offers opportunities to diversify around a common case of strategic resources, for example for the purpose of market expansion (Katyal, 2016; Hough et al., 2007). However, concentric mergers rarely emphasize financial capacity maximization (Hough et al., 2007).

The last merger type *conglomerate merger* can also be called conglomerate diversification. These mergers involve companies with no buyer-seller relationship, unrelated products, dissimilar technologies or distribution channels. (Hough et al., 2007) In other words, the businesses of the two companies are not related to each other horizontally nor vertically, thus the reasons for these kinds of mergers are often maximization of financial capacities and synergy of managerial functions with merging the companies under one flagship company. (Hough et al., 2007; Katyal, 2016) At the same time limited priority is placed on the exploitation of economies of scale and scope (Hough et al., 2007).

2.3 Motives for merger

When talking about motives for mergers, it is important to note that motives between mergers of unrelated companies and mergers between subsidiary-parent companies differ a lot (Slovin and Sushka, 1998). There are also differences in motives between companies in different industries (Hsu, Wright and Zhu, 2017).

On both conventional and subsidiary mergers the causes for mergers can be divided under three levels: macro-level, industry-level and firm-level causes. Under these levels there are several sub-causes, which together cause the merger decision in a

company. On **Figure 3** can be seen the causes and sub-causes that affect the merger decision in both conventional and subsidiary mergers.

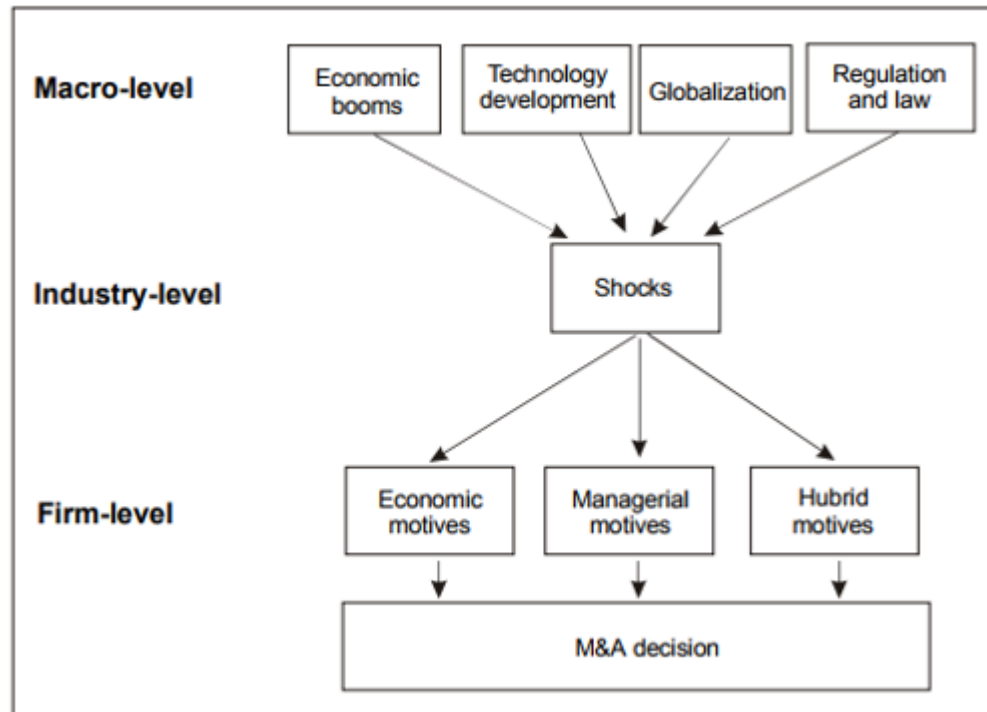


Figure 3 Causes that effect merger decisions (Adapted from Ali-Yrkkö, 2002)

On macro-level there are influences and megatrends that affect the entire industry, such as economic booms, technology developments, globalization and regulations and laws, which causes pressures and presents opportunities for development in industries. Together these pressures or opportunities cause simultaneous shocks in the industry-level, which pressures companies to make changes in their organizations. As a result the firm-level motives form, which finally lead to the decision whether to merge or not. These firm-level motives can be roughly divided into three categories: economic motives, managerial motives and hybrid motives. Under these three categories each company has their specific reasons and motives, from which below are presented the few most common ones. (Ali-Yrkkö, 2002)

Below economic motives the main reasons for mergers can be seen through economic performance, efficiency and cost reductions. According to this motive, companies gain synergies in mergers which leads to cost saving. (Ali-Yrkkö, 2002; Ng and Donker, 2013) Cost synergies are also easier to realize after merger due to

their predictability and controllability when compared to growth synergies (Scola, 2015). Other important theoretical motives are the stock-driven motives. As a rule managers are motivated to acquire other companies because they can take advantage of high stock prices to buy other companies relatively cheaply. (Ng and Donker, 2013) In a merger market power is gained as well, which in some situations may give companies monopoly-like positions, which lead to above normal profits in turn. Companies also acquire resources in mergers, which means that the acquiring company can increase its capacity without increasing the total capacity in the industry that may have a large impact on profitability especially in declining industries. (Ali-Yrkkö, 2002)

Instead of long-term benefits, some mergers are motivated by speculative motives. Managers and shareholders may make the merging decision in the hope that the acquired company's value will increase in the future, even though the present value expectations are not that good yet. The background for managerial motives in turn may lay in the differences of interest between managers and owners of the companies. In that case the corporate managers can try to enhance their own interests through merger decisions. The last category hybrid motives is a mixture of all the previous, since in most cases there is not only one motive that leads to merger decision, but several motives that together form the final decision. (Ali-Yrkkö, 2002)

There are also motives that are characteristic to certain industries and may differ a lot when compared to other industries. Oil and gas industry is one of those industries that has specific motives that are characteristic for that particular industry sector. In general, change forces such as technological advances, globalization and deregulation affect oil and gas industry as well and increase mergers that happen inside the industry sector. (Ng and Donker, 2013) However, Hsu, Wright and Zhu (2017) suggest that overall stock market performance is not a good indicator of merger activities especially in the upstream sector of oil industry, which differs from other industries merger motivations. They also propose that capital market

liquidity does not have any effect, positive or negative, to the merger activity in the oil industry. (Hsu, Wright and Zhu, 2017)

In oil and gas industry there has been a good amount of growth in the last decades mainly because of the development of horizontal drilling and fracking technology. At the same time there has been as well a heavy rise in the merger activity in the industry, especially in the upstream industry sector. (Hsu et al., 2017) In oil industry it can be seen that oil companies acquire reserves and other production assets through merger activities to increase output growth and shareholder value, which is one of the main motives in merger decisions in oil industry (Hsu et al., 2017; Ng and Donker, 2013). These reserves cause and influence takeover activity, value and performance especially with acquirers (Ng and Donker, 2013).

Besides production, another big factor that affects merger activity is oil and gas valuation, which is mainly influenced by oil prices. Especially it can be said that instability in oil prices triggers mergers and restructuring. (Hsu et al., 2017; Ng and Donker, 2013) Volatile oil prices positively affect takeover activity also in oil depended industries like transportation, as well as in oil related industries like petroleum producing (Ng and Donker, 2013). As a summary it can be said that oil price and oil production are the most important factors that effects merger activity, while other variables do not show consistent effect across regions and definitions of mergers and acquisitions (Hsu et al., 2017; Ng and Donker, 2013).

When comparing subsidiary mergers to conventional mergers, motives for parent-subsubsidiary mergers differ from conventional mergers due to the fact that parents already have pre-existing control over their subsidiaries, which is often one of the main motives for conventional mergers. Another reason is often financial asset investment, which is also not a motive when a parent company reacquires one of its own subsidiaries. (Slovin and Sushka, 1998; Otsubo and Miyoshi, 2009) In parent-subsubsidiary merger the merger facilitates the reallocation of resources toward higher valued uses and generates market expectations that the merged entity will be more profitable than the separate affiliated entities. The parent-subsubsidiary mergers don't

harm minority shareholders interest as a rule, since the minority shareholders get similar excess returns as they would receive in third party buyouts of subsidiaries. Instead they enhance corporate flexibility, reduce propriety costs that could arise from disclosure, reduce conflicts of interest, potential legal costs and generates gains in productive efficiency. These gains to productive efficiency may come from economies of scale and scope, elimination of duplications or administrative services required of affiliated public companies and from centralized planning and control. Together these positive gains from parent-subsidiary merger are value enhancing for both subsidiary and parent shareholders, and the value of combined enterprise is greater than the sum of the pre-announcement values of the separate entities. (Slovin and Sushka, 1998)

Table 3 Summary of motives for merger

Motives		Conventional merger	Oil and gas industry	Subsidiary-parent merger
Economic motives	Economic performance	x	x	x
	Efficiency	x	x	x
	Cost reductions	-	-	x
	Gained synergies	x	x	x
	Gained resources	x	x	-
	Product valuation; prices	-	x	-
	Financial asset investment	x	x	-
	Duplicate work deletion	-	-	x
Managerial motives	Stock-driven motives	x	x	-
	Control	x	x	-
	Speculative motives	x	x	x
	Manager's own gain	x/-	x/-	x/-

As a summary, in the literature organizational change has been divided into three principle terms: *reconfiguration*, which basically encompasses the organizational

change within business units without changing the organizational structure; *restructuring*, which involves changing the organizational structure by for example merging business units, but not necessarily reconfiguring the business processes in the company; and lastly *reorganization*, which can be regarded as an umbrella term for the previous two. Two types of mergers were found in the literature, the first being the *absorption merger*, where the parent company in the merger continues to exist, and the other being *combination merger*, where two or more companies merge and form a new company.

Motives for merger were found in the literature to be many and varied, ranging from economic motives to managerial motives, as well as to hybrid motives, which combine the two. Merger motives were also compared from the viewpoints of conventional merger, oil and gas industry merger and subsidiary-parent merger, and it was found that the motives of merger may depend majorly on the unique situation, industry and organizational structures the merging companies are in.

3 POST-MERGER INFORMATION SYSTEMS INTEGRATION

In the following section a theoretical framework for business and information systems post-merger integration is presented. In both conventional merger and subsidiary merger often the integration planning starts already after the merger decision. In post-merger information system (IS) integration there are also different perspectives to the topic that determine in some cases also the post-merger integration success and at least the perspective from which the integration project is done. Alaranta and Kautz (2012) present three different perspectives in their research, which can be divided into *structural, individual and interactive process perspectives*.

1. Structural process perspective. Structural perspective does not address the impact of individuals, their characteristics, or their actions; nor does it account for the interaction between structure and action over time. Instead it deals with questions like what is the selected IS integration strategy, how is the distribution of decision making in the IS integration process handled, what is the IS and business alignment in the merger and what is the role of the IS in the merger.

2. Individual perspective. In this perspective the individual managerial skills and actions are the most important determinants in the merger IS integration success. Also key stakeholders, project teams, external consultants and their skills and experience are identified as important factors in order to achieve a successful implementation.

3. Interactive process perspective. This perspective builds on the structural and individual perspectives, as in reality they are inseparable and complement each other. Another important perspective in this perspective is the content of change, where the interaction between structural influences and the skills and actions of individuals forge the final ERP products, and the original functionalities and design may change a lot when compared to the final product.

However, this master's thesis handles the topic mostly from interactive process perspective with the emphasis on structural issues. This post-merger integration

(PMI) -chapter is based on a literature review of existing knowledge on post-merger integration in the forms of business and information systems integration, in a way that the main focus is on information systems integration. In the first section information systems integration is introduced as well as system development life cycle. In the second subchapter business integration is introduced in turn briefly and compared to IS integration as well as their integration strategies dependencies are presented. In the third subchapter the contextual influences that affect information systems integration are presented and in the last subchapter the most crucial success factors in post-merger IS integration are presented.

3.1 Information systems integration

In a merger situation often the expectation is to achieve significant synergies from economies of scale, rationalize facilities and industrial plants and eliminate legacy systems (Pires and Marcondes, 2017). Often also departments, processes and functions merge as a result (Vieru and Rivard, 2014). Together these things all have in common the fact that they imply and require changes in information technology and information systems. (Lundqvist, 2012; Vieru and Rivard, 2014; Pires and Marcondes, 2017) Among another integration activities information technology (IT) or information systems (IS) integration is one of the most complex areas to manage and control and thus also an area that has many critical issues in a merger. For example a failure in system integration after a merger may result as disruptions in major business operations and delays. (Chang, Chang and Wang, 2014) Often the activities that are related to IS in merger are also the items that require higher costs (Pires and Marcondes, 2017). Research has also shown that the success of IS integration is highly depended on collaboration among individuals in different business operations. This can be challenging since often the actors that are involved may abide by different local, social, and cultural rules that are founded in different organizational contexts. (Vieru and Rivard, 2014) All of these mentioned aspects affect companies already to the extent that around 50 percent of companies indicate that IS integration is one the most major obstacles that affects merger success (Hough, Haines and Giacomo, 2007). In a situation like this, it is important to

approach IS integration from a holistic point of view and focus on the possible reorganization processes that IS integration causes, since after all, all the value creation takes place after the merger which emphasizes the importance of the quality of the post-merger integration process (Lindqvist, 2012; Haspeslagh and Jemison, 1991, p. 15).

When talking about the information system integration, first it is important to define the words information, data and information system (IS) and their differences. A classic criterion of an IS is the capacity to collect, process, store and distribute data. Data can be described as means for informing, thus, as knowledge representation. So, basically information systems are providers of information and data systems are subsystems of information systems. It could be said that no matter how data is provided by the IS in the future IS would still be depended on the people who develop them. In other words, people turn data into purposeful information. (Lundqvist, 2010, p. 39-41)

In this master's thesis, by information systems integration is meant enterprise resource planning (ERP) systems integration. ERP can be described as a suite of integrated, highly efficient and multiuser applications, which are built for the comprehensive management of manufacturing industrial company. Usually ERP covers all core business processes from production and distribution, and integrates various company departments, facilitates information flow between business functions and provides responses to the changes in demand. (Kamiński, 2013) This ERP links all systems and procedures of an organization by leveraging the power of information technology, but it may initially also require a complete overhaul of the systems and procedures first. This kind of technology-centric change may be part of a business process engineering that involves redesigning the business processes to maximize potential and value added, while minimizing everything else. (Gilson, 2011) Research has shown, that even though the implementation of an ERP system may require changes in the business operations, it also provides in some cases an efficient support for restructuring changes in the company and brings benefits in the functional and strategic areas (Kamiński, 2013).

When analyzing the structure and implementation of an ERP system, it is important to partition the system into subsystems or blocks from which the system is constructed, since often complex things can be better understood piecewise. Also the design of the system can require subsystems to be analyzed and their external properties defined, which is impossible to do without subsystems. Usually the actual system development process starts from need that is solved with an information system ERP. Overall the system implementation process can be described with a waterfall model through seven phases, which follow each other often overlapping to some extent depending on the actual ERP development project. In the waterfall model need is followed by a feasibility study, which is followed in turn with analysis and model design. After the new information system has been designed, the actual coding and testing phase begins, followed by the actual implementation and handover of the new system. (Lundqvist, 2012, p.42-43) An example of the waterfall model is shown in **Figure 4**.

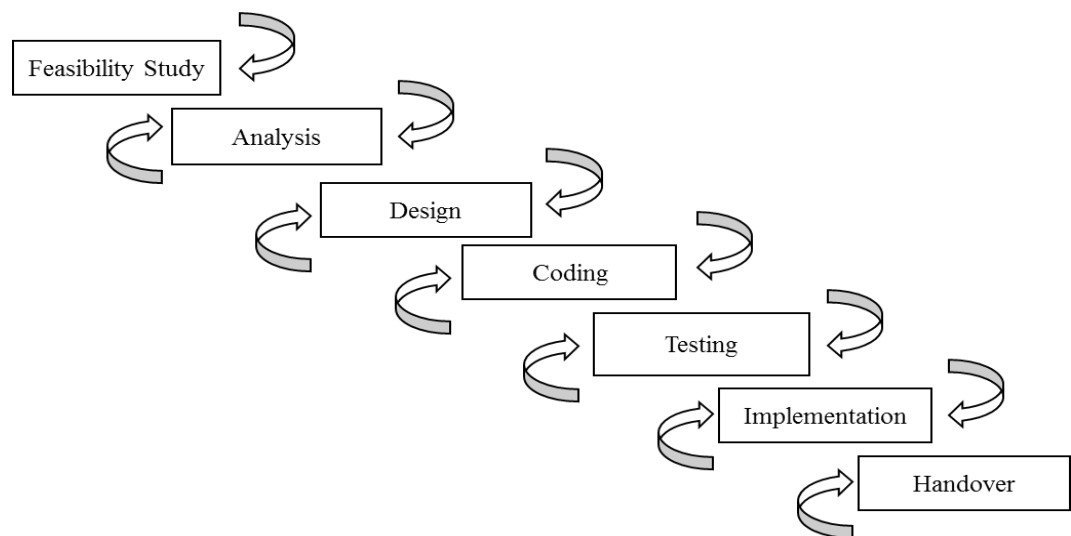


Figure 4 A waterfall model of system development (Lundqvist, 2012, p. 43)

Often in waterfall models each phase needs to be finished before the next phase can start, which can cause some problems in the control and planning of the whole IS integration project. Another problem in the waterfall model is the fact that requirements need to be formulated early in the process and they can be difficult to change later on even if needed. Therefore waterfall model suits best companies that

are rather mature in their processes and the requirements and needs are well understood beforehand. (Lundqvist, 2012, p. 43)

Another example of system development model is shown in **Figure 5**, which shows an example of a system development life cycle. Different from the waterfall model, which is developed specially to system development, the system development life cycle model shows also the end-phase for the system, which includes maintenance and eventually the phase out of the system. Often the maintenance phase starts after the system has been handed over to the client organization, since the system has to be maintained throughout its lifecycle. By system maintenance is not only meant correcting activities but also further development, which is needed in the changing business environment. (Lundqvist, 2012, p. 43)

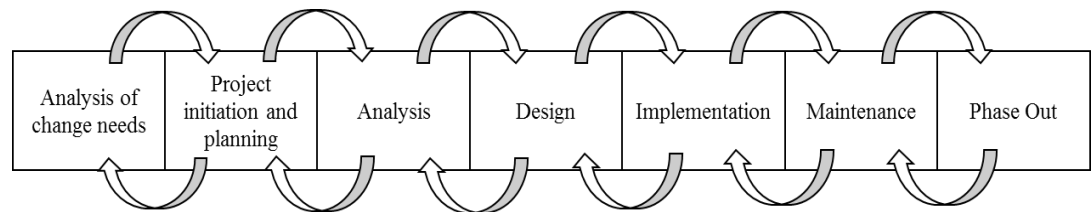


Figure 5 System development life cycle (Lundqvist, 2012, p. 42)

It is important to note the various success factors in the system development project, especially in the case of a post-merger IS integration project. In most cases, the fact that the new implemented IS is taking over two previous systems is a haze factor, since the new system needs to take over not only one, but two systems seamlessly. It also often means extended number of variables that needs to be taken into account and larger organizational changes and impacts in the participating companies. In a situation like this, it is of utmost importance to try to reduce the large number of variables. In other words, it is important to find common structures and procedures in the merging companies that can be used in the new IS. That way the large number of variables can be reduced to only a few. (Lundqvist, 2012, p. 53) Chang et al. (2014) also note, that it is important to focus on the operational procedures instead of on the integration of application programs. If companies focus only on the integrated programs, and not on the bigger picture, for example procedures and operations, the new system may require long-term system maintenance to ensure its

operational performance, which in turn affects the success of the information system. (Chang et al. 2014)

In IS integration another important factor to consider, which affects as well the success of the system implementation, is the degree of compromise between the package functionality and the modifications and changes that the company may require and need in order for the system to fit the company seamlessly. Often the technologies of the modern systems allow them to be adapted and changed to the specific nature and need of the particular company. As a result, however, the testing, documentation and maintenance of the new system may be more demanding or require a higher cost. Sometimes changes in the standard software architecture may also increase the risk of future updates that are made. (Kamiński, 2013)

In **Figure 6** is presented a framework for IS success, which builds on the multidimensionality and interdependency of different categories that affect the success of IS together. These categories can be divided under three bigger categories named system design, system delivery and system outcome. As a result this model emphasizes the end-users point of view in category system delivery through use and user satisfaction, which affects the success of the new IS in addition to the actual system design. System design can be divided to three subcategories: system quality, information quality and service quality, which are all the basic building blocks in the system. The last category system outcome describes the individual and organizational impact that the new IS causes, which is the result of the organizational change that has happened in the company due to the new information system. (Halonen and Thomander, 2008)

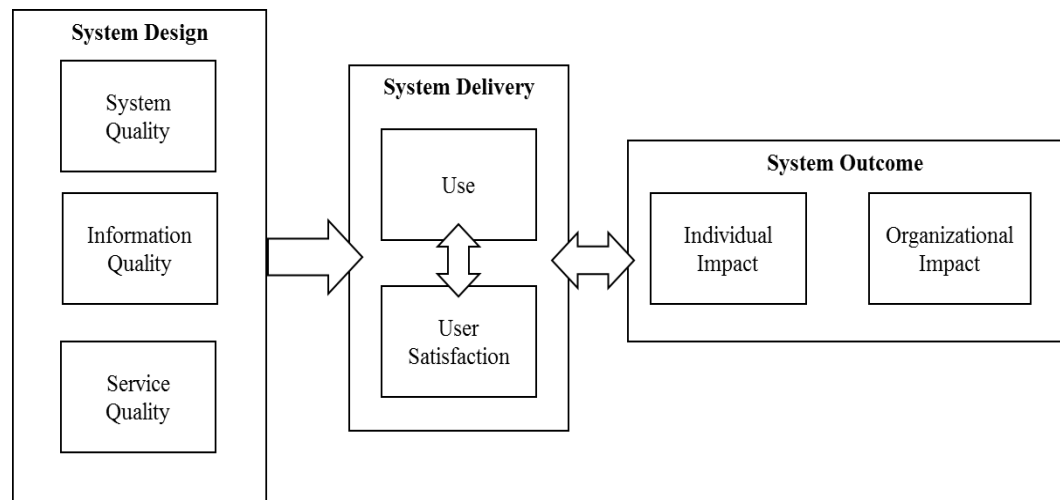


Figure 6 IS success model (modified by Halonen and Thomander, 2008, p. 7; Lundqvist, 2012, p. 55)

3.2 Business vs. information systems integration

When talking about information systems integration, it is often located under business integration context in post-merger integration situation. In theory, information systems integration is made on the terms of business requirements, but in practice that is not always possible. For example, sometimes companies focus solely on the integration of application programs instead of operational procedures (Chang, Chang and Wang, 2014). So the PMI systems integration is based on a framework of a larger post-merger M&A integration, which is important to understand. So in order to analyze the needed aspects in IS integration, business context is also important to understand, which is presented below shortly.

3.2.1 Business integration

During the merger decision and business integration process it is important to consider strategic, structural, personnel, cultural and stakeholder integration (Ruess and Voelpel, 2012). Often also at organizational integration there is need for cross-business coordination and IT-based integration, since as the organizational size grows the coordination capacity of human-intensive mechanisms become limited.

In that case IT-based integration helps in achieving higher levels of organizational integration. (Tanriverdi and Uysal, 2011)

Based on Ruess and Voelpel (2012) business integration can be divided into two orientations: actor and content orientation. These two orientations can be further divided into five action fields: strategic, structural, personnel, cultural and stakeholder integration. Between actor and content orientation the merger decision and integration process takes steps forward. Often these two orientations are inextricably intertwined, and neither of them can lead on their own into a successful post-merger integration process. From the action fields strategic and structural integration are part of content orientation, and personnel, cultural and stakeholder integration belong under actor orientation. (Ruess and Voelpel, 2012) The merger process with its fields is described in **Figure 7**.

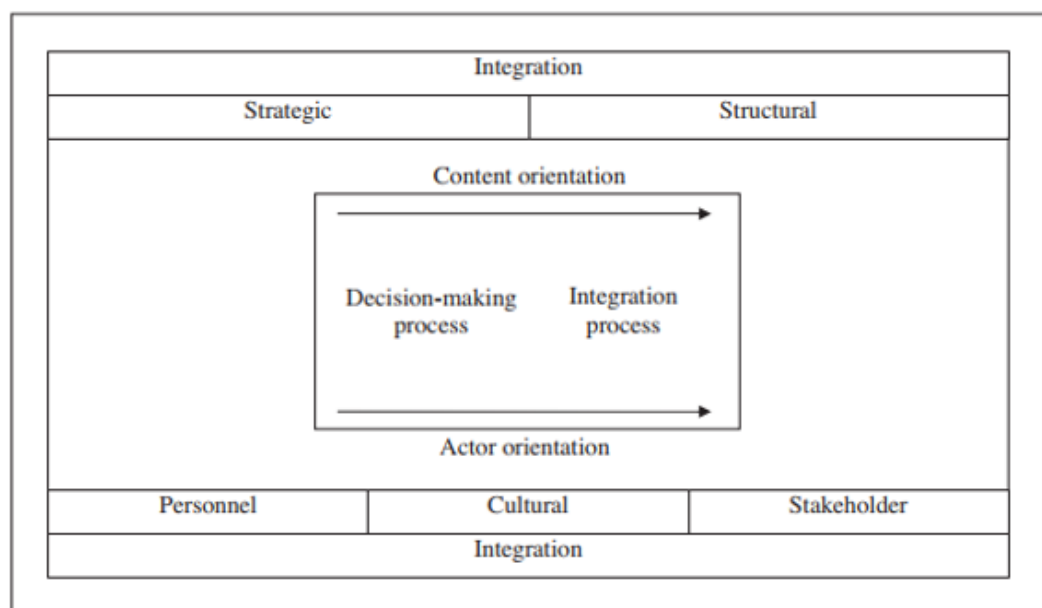


Figure 7 Merger process with action fields (Ruess and Voelpel, 2012)

In strategic and structural integration the main focus is on the elaboration, further definition and retention of the basic content characteristics for the post-merger integration. In personnel, cultural and stakeholder integration the main focus is, on the other hand, in propagation, negotiation and acceptance of the company takeover among the top management, personnel and stakeholders. (Ruess and Voelpel, 2012)

Under content orientation, by strategic integration is meant an overarching function that has a central role in the whole post-merger integration process. With the help of strategic management instruments the company is able to develop a clear strategic direction that is implemented in the course of the post-merger integration process. Structural integration complements strategic integration and helps in establishing meaningful and strategically adequate organizational structures for the two merging companies. Under actor orientation the action field personnel integration is primarily an internal action field and centers around personnel structure, personnel qualifications and personnel costs. Cultural integration action field, on the other hand, overlaps with the other action fields and is considered transparent and difficult to systematize. It centers on actions that help to develop a joint company culture, like identifications that detect the different existing cultures and concrete actions that lead towards a common company culture. The last action field is stakeholder integration, which includes both private and public sectors, for example customers, business partners, union representatives, employees and work council representatives. Both private and public stakeholders are important in post-merger integration success and without their support the whole integration could be in jeopardy. (Ruess and Voelpel, 2012)

3.2.2 Business and IS integration strategies

Mergers can be seen as one of the main strategic tools for companies, since they are dramatic events in company's life cycle and have fundamental influences on its business processes (Alaranta and Martela, 2012). After the actual merger, the post-merger integration can be seen as a process of planned value creation, which will materialize when the companies are amalgamated. However, all mergers do not cause the same degree of reorganization among the merging parties. At one extreme, a status quo is preserved on both merging parties, and at the other extreme, the other company adsorbs the other company's norms, culture, practices and systems. (Vieru and Rivard, 2014) There is evidence that, in particular, subsidiary-parent mergers often involve extensive restructuring, suggesting that subsidiary

mergers facilitate corporate refocusing and promote reallocation of resources to higher valued uses. (Slovin and Sushka, 1998)

Haspeslagh and Jemison (1991) present three different post-merger integration approaches for business integration, which are *preservation*, *symbiotic* and *adsorption integration*. In preservation integration the acquiring company preserves its way of doing business with low interdependence and high autonomy. In other words, the old boundaries remain intact between the merging companies (Vieru and Rivard, 2014). In symbiotic approach both companies are highly interdependent but with a high level of autonomy (Haspeslagh and Jemison, 1991). Often in a situation like this the companies retain the best parts and practices of each organizational structure (Vieru and Rivard, 2014). Adsorption integration on the other hand represents a situation where one of the firms adsorbs the others business into its culture by imposing its work practices and norms on the other party (Haspeslagh and Jemison, 1991; Vieru and Rivard, 2014).

Vieru and Rivard (2014) also present a fourth integration approach for business integration, *transformation*. In transformation integration, all the merging parties are integrated by developing a totally new organization structure and work practices that are new to everyone.

Information systems integration strategies can be divided from three-step integration strategies all the way to an eight-step integration strategy depending on the researcher. One of the simplest strategies is presented by Pires and Marcondes (2017) and it includes three IT integration objectives: *complete integration*, *partial integration* and *marginal (or coexistence) integration*. Complete integration is performed through renewal, which often includes the complete design of new processes and the related information systems. Partial integration involves choosing one of the information systems in the merging companies and that way avoiding information technology redundant cost. Partial integration also allows companies to do the so-called "best-of-breed" selection, which allows them to choose the best parts of the already existing information systems. Marginal or coexisting

information systems integration on the other hand means a integration where everything is kept the way it is, generating only a marginal integration between the information technology structures which are preserved in the organizations. (Pires and Marcondes, 2017)

At the other extend, Alaranta and Kautz (2012) present eight strategies or options, which vary from maintaining the status quo over different types of partial integration to full integration. These eight options can be placed under Pires and Marconades' three-step framework, and thus they present a more specific and detailed approach to information systems integration strategies. These eight strategies are *tailoring a new information system, acquiring a new ERP solution, adopting the acquirer's ERP, picking and mixing the best applications, outsourcing the ERP, doing an enterprise application integration, building a "bridge-ware" or doing a mixture of all the above.*

In most cases, the information systems integration is in line with symbiotic approach of the business integration strategies presented earlier, as presented in **Figure 8** below (Vieru and Rivard, 2014).

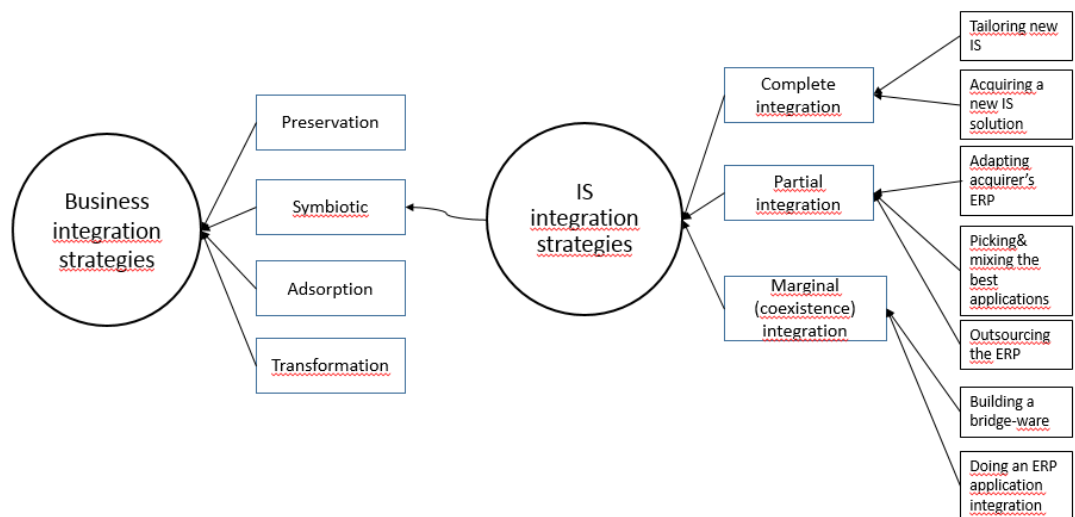


Figure 8 Business- and information systems integration strategies

3.3 Information systems integration contextual influences

Hough, Haines and Giacomo (2007) describe contextual influences that surround ERP integration success after merger, which can be divided into four levels from broader context to process-related context. These contexts are *external business* or *industry context*, *organizational context*, *information systems context* and *enterprise system project context*.

External business / industry context. For example, the maturity of the industry and the merger activity in the specific business area are part of external business or industry context. Also, the company ownership is part of the industrial concept, for example state owned company may be susceptible to political risks. On the other hand, product prices and cash flows are part of external aspects that effect the merger. Especially in the oil industry researchers evaluate that the merger and consolidation activity is expected to rise as the costs of processing heavy sour crude oils have increased, and at the same time the motor vehicle emissions standards and gasoline control requirements increase costs. (Hough et al., 2007)

Organizational context. Under organizational context that effects the IS integration is for example the merger type, which can be horizontal or vertical. Also the organizations attitude towards IT influences the integration of enterprise systems. Top management's attitude in particular is a big factor; do they view IT as a strategic activity or just a cost cutting technique? (Hough et al., 2007)

Information systems context. Information systems context can be divided between *structure*, *change control processes* and *outsourcing*. Companies can differ a lot in how they structure their IT organization between supporting at the same time existing functionalities and developing new, which the merger may require. One company may have a special team that focuses on day-to-day operations and another team whose focus is on new development projects. Another company may support production by adding resources when needed or at a specific

level staff to accommodate normal production support duties in addition to a certain level of development projects. (Hough et al., 2007)

Change control processes on the other hand ensure the integrity of an information system. Change processes can be divided between decentralized or federated IT organizations and to centralized IT organizations. In decentralized organizations any changes can be made when they are felt necessary, in turn at centralized organizations the procedures are very strict and even minor changes must be tested by documented quality assurance process. Especially, more mature organizations tend to have stringent change control processes. It is also good to notice that in major ERP projects much of the time is being spent on testing different kinds of business scenarios, especially when many business functions are being integrated into one system. It can be said that change control process is a high priority for companies who are implementing new ERP systems, and some ERP systems, for example SAP even recommends a stringent control process. (Hough et al., 2007)

Chang, Chang and Wang (2014) support the importance of rigorous change control process in the key findings of their research. When two ERP systems are being integrated the uniqueness of both systems, add-ons and modifications need to be taken into account. If this is not done, there is a high risk for possible delays or disruptions in major operations. Sometimes, if the two systems are not integrated right after the merger, standardizing the system afterwards will be even more difficult and can cause cultural resistance and affect work routines. It is also good to note, that even if the two pre-merger companies have the same ERP or CRM system in place, they can differ a lot in business processes, rules, complexity and in scope, even inside the same industry. (Chang et al., 2014)

By the third section, outsourcing, is meant outsourcing some technical jobs or parts of the process to lower cost overseas labor markets, but generally that is not as common in ERP related projects. (Hough et al., 2007)

ERP project context. The ERP project context is the largest of the four contexts and it includes the actual selected *ERP solution, integration team structure,*

training, external interfaces, business process design and the go-live changeover. The ERP project context starts with selecting the ERP system, which leads to integration team structure. Almost always it is recommended to separate the integration team from day-to-day processes, which allows the teams to focus on integrating the best practices during the merger. Also, after a big ERP systems integration the organizational change and training issues are always present as they are a challenge for any company. Also, most of the companies have some kind of external interfaces implemented in their ERP systems, for example electronic communications with external entities, like paperless electronic invoicing and payment systems or electronic feeds to customers for account statements for example. Another big part of this context is the business process redesign, where is determined which functionality is best for which business process, or whether the company is using existing business processes and just implementing best practices. Often the last step of the actual ERP implementation process is the go-live changeover. When the new ERP system is finally put to production and taken into use, usually the last unplanned outages or significant process issues are revealed. One example can be for instance delayed customer billing, which can be fully automatized.

Overall, the implementation of two enterprise systems can be viewed through systems theory, which is showed in **Figure 9**.

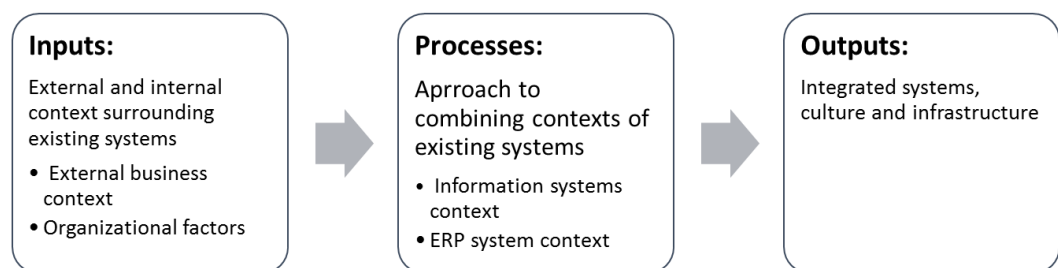


Figure 9 Systems theory view on ERP integration (Adapted from Hough et al., 2007)

The systems theory view of enterprise system integration can be divided into three steps. Inside the first step *inputs* is located the external business context and organizational factors, which are formed from the infrastructure of the two merging companies. Under the second step *process* is located in turn the information systems

context and ERP integration project context, and the approach how to integrate the systems and infrastructures of the two companies. The last third step is *outputs*, which holds inside the integrated systems, the new merged company culture and the new infrastructure. (Hough et al., 2007)

3.4 Crucial factors in post-merger systems integration

Several researchers and companies have investigated the critical success factors that are related to ERP integration projects after merger. Often those factors and points vary depending on the industry and merger deal, but there are also several points that are common for almost every industry type. These points may arise for example from different operating philosophies, management practices, administrative procedures or communication styles. Often also technical and organizational choices may cause problems in ERP integration after merger in companies, when the critical success factors are emphasized. (Pires and Marcondes, 2017)

One of the most crucial success factors is the alignment between business and information technology strategy and planning. The IT strategy needs to be aligned and coherent with the business strategy, so that the IT is suitable and fits with the existing company's structures and processes. (Pires and Marcondes, 2017; Lundqvist, 2012, Tanriverdi and Uysal, 2011) This aligned integration project with the overall integration plan often also ensures the top management's support and the access to important resources (Hough et al., 2007; Alaranta, 2005). Also all of the measurements of the post-merger ERP integration need to be aligned with merger strategy and vision. That way the targets are clearly formulated from the beginning and it is easy to follow up with the process (Lundqvist, 2012; Hough et al., 2007).

Another big factor can be in turn labeled under heading technical aspects. In this ERP integration context a larger role has been given for technical aspects, as technology is a big part of post-merger ERP integration. Part of these technical aspects is the configuration of systems integration technology, which includes for example the formal representation of the system sizes, including structural

contingencies and positions of people, authors and end-users holding that role in the company. (Hough et al., 2007) Another big part is the infrastructure and architecture of the new integrated ERP (Tanriverdi and Uysal, 2011; Hough et al., 2007). By those are meant the technical choices that are used to support the business requirements. Normally ERP system obtains multiple systems, so architecture is needed in order to specify the policies and mechanisms that describe the technological model of the company. If this technological factor has been taken into consideration, the standardization and data sharing between applications produces also synergistic results. (Hough et al., 2007) Tanriverdi and Uysal (2011) also suggest that if a company has the capability to a high level cross-business IT integration, in the long run they could also have a higher operating performance. Also software development, testing, change control and project measurement processes are part of this success factor. (Hough et al., 2007)

In order to achieve for example these technological aspects, the merging companies need to have a dedicated team, which implements those. The third success factor is therefore team. Strong integration team with good communication skills throughout the project is vital in order for the integration to be successful. Technical and business expertise inside the team, which is preferably linked to previous experiences, is one of the key assets as well. Also strong team management is part of this success factor. (Pires and Marcondes, 2017; Lundqvist, 2012; Hough et al., 2007) Preferably, inside the teams there should be members from both merging companies, so that the existing knowledge and skills could be fully capitalized, and that way possibly even rely less on consultants and outsourcing. This is especially the case in mature companies, where there is individual and organizational knowledge and memories from past ERP integrations and system development projects. (Hough et al., 2007)

The fourth and last critical success factor heading is project process. Post-merger integration process speeds the implementation, and supports the organizational change when unifying the two separate organizations. (Lundqvist, 2012; Hough et al., 2007) Properly planned and implemented project process also reduces costs,

brings efficiency and effectiveness to the integration and ensures that the staff resources are efficiently used (Pires and Marcondes, 2017; Alaranta, 2005; Tanriverdi and Uysal, 2011). Usually, if the two merging companies are mature organizations in oil industry, or if the merger is horizontal, it is an advance, as the firms probably already share a similar focused mindset on efficiency in low margin industry. Also, in mature industries, the companies probably already have a learning curve from previous ERP integrations, which is an asset in the new post-merger integration project. (Hough et al., 2007). All of these previously success factors are represented as a conclusion in the **Table 4** below.

Table 4 Critical success factors in post-merger ERP integration

Integration strategy and planning	Technical factors
<ul style="list-style-type: none"> • Aligned and coherent ERP integration strategy with the business integration strategy • Top management support • Access to resources • Aligned measurements (follow-up, clear targets) 	<ul style="list-style-type: none"> • Configuration of system integration • Infrastructure and architecture of system integration • Software development, testing, change control, project measurement processes
Integration team	Project process
<ul style="list-style-type: none"> • Strong integration team • Capitalization of existing skills • Technical/business expertise • Communication • Integration management 	<ul style="list-style-type: none"> • Speed of implementation • Support for organizational change • IT-strategy making process • Efficiency and effectiveness aspects • Efficient usage of staff resources

As a summary of chapter 3, in the literature three main perspectives on IS integration were found: first, structural process perspective views the integration from the viewpoint of formalized processes, second, individual perspective focuses on the perspective of individuals in the integration and last, interactive process perspective builds upon the two previous, taking the specifics of both into account. In this study the focus is on interactive process perspective, with the emphasis on the process perspective, as in the case company of the empirical part the individual perspective was more under focus in the start of the integration project and at the time of this study the majority of the challenges emerge in the process perspective.

The collected success factors derive from the contexts in the literature and support this previously mentioned focus point of the study, as the three main headings of the groups can be put under the process perspective, namely *integration strategy and planning*, *technical factors* and *project process*, and then *integration team* can be put under individual perspective. Although the focus point in this chapter was in IS integration, the side of business integration should be always kept clear in mind, as a successful IS integration should be done in the terms of the business of the company. In the end, even though in a such complex topic like IS integration the classification of types of perspectives, processes, contexts and success factors are very useful, it should be noted that all of the aspects are highly interconnected and so nothing can be ignored in managing a successful IS integration.

4 METHODOLOGY

The aim of this chapter is to provide an insight to the methodical choices made in this master's thesis, so that if necessary the reader could duplicate them exactly. The discussed things are research context and method, data collection, data analysis and the reliability of the results within the described constraints. (Ghauri & Gronhaug, 2005, p. 56) In every subchapter there are also parts and comments from literature, with a discussion of how those aspects have been adapted to this master's thesis case study.

4.1 Research context

The aim of this study is to analyze what are the factors that lead to ERP integration success following a merger, and how a company merger and ERP implementation project affect each other when executed at the same time. The aim of this thesis was decided in cooperation with the case company. The main objective of this thesis is to study what problems and challenges the implementation of the merger and ERP implementations simultaneously causes, as well as to define the most critical points for the implementation project.

Because of the case company, the viewpoint to the subject in the empirical part of this thesis is narrower than in the theory part of the study, in a way that the theory part discusses the subject from a larger context, and the empirical part focuses on subsidiary merger and to specific challenges and problems in the case company. However, the aim of the whole study is to look at the effects of merger and ERP implementation to each other in a broad and open way, and only then in the empirical part, to give one specific example to the subject with the help of the case company.

4.2 Research method

The research method for this master's thesis was qualitative research in an explorative research design. Exploratory research design is utilized in studying unstructured research problem. In exploratory research design the role of the literature research is to provide hypotheses and suspects to guide the direction of the research. Qualitative research aims to identify challenges and advantages in the empirical setting by observing, information gathering and explaining constructs in the context. (Ghauri & Gronhaug, 2005, p. 58).

Case study is the research strategy of this study. Case study is a qualitative empirical study, where the defined phenomenon is observed in a defined context. In a case study several examples are studied deeply and they provide a viewpoint to the phenomenon. In a case study generalization should be avoided, as the aim is to research empirically the phenomenon and make observations. (Yin, 2009).

However, in this study there were used only one case company, so the aim was to examine in depth the issues and research questions through that company, and get examples from one case company's perspective. So, in this study the defined research environment is post-merger information systems integration, and examples are taken from one Finnish case company. As a result this study creates understanding of issues that arise in a specific oil business area, however the business area where the case company operates is mature and information systems and mergers are quite coherent, so the results may be reflected to other case companies in the same situation, even at different business areas.

As a whole, the time perspective in this study is cross sectional, and the results represent the situation and interviewees opinions at the time of the interview. Thus, the aim of this study was not to study how the knowledge on the issue grew the longer the integration project went, but to reflect the knowledge base and issues at the beginning of the project, and give starting points where to focus. (Saunders et al., 2009) In this study the interviews were executed between November 8th, 2017

and February 1st 2018. As a result the time period and perspective in this study is approximately 3 months.

4.3 Data collection

The research area in this study is one case company in Finland, Neste Oyj, with the note that the case company operates in several countries. The original plan was to interview from 10 to 20 people from different organizations and departments inside the case company. The chosen interviewees were selected based on their knowledge on either the business or the implemented information system, in a way that interviewees with knowledge on both areas were preferred. Thus, the goal was to ensure that the interviewees had the widest possible knowledge of the topic, and the capability to respond to the interview questions. In general, the interviewees were either consultants who were involved in the project, project workers from case company side, or managers and directors from different case company business functions. The invitations were sent first by email, and after that contacted via case company's internal message system. In total, the summary of the interviewees is presented in **Table 5**. The total numbers of interviewees was 17, including three group interviews, where there were two participants in each. As a result, there were a total of 14 interview occasions.

Table 5 Summary of the interview study

Intervi ewee	Type of position	Date	Interview type		Specialty area	Duration Min
			Ind.	Group		
A	Enterprise Architect	27.11.2017	x		ICT Architecture and Governance	59
B	Senior Legal Counsel	10.11.2017	x		Legal Affairs	47
C	Business controller	8.11.2017		x	Planning/ Control	41
D	Specialist	8.11.2017		x	Reporting/Analytics	41
E	Supply Chain Development Manager	31.10.2017	x		Supply Chain Management, RP	52
F	Consultant	27.10.2017	x		Bio management, RP	57
G	Consultant	11.10.2017	x		Consultant company program manager	47
H	Head of Tax and Customs	10.10.2017	x		Group Accounting and Services	
I	Head of Supply Chain Development	11.1.2018	x		Supply Chain Development	56
J	Controller	1.2.2018	x		Planning and Control	119
K	Controller, Team Manager	17.1.2018	x		Planning and Control	45
L	Team Lead/Specialist	2.2.2018	x		Business Processes, ERP	30
M	Business Process Manager	24.1.2018		x	Business Processes, ERP	36
N	Solution Manager	24.1.2018		x	Business Processes, ERP	36
O	Solution Manager	19.1.2018		x	Business Processes, ERP	44
P	Business Process Expert	19.1.2018		x	Beagle project	44
Q	Head of Business Processes	Several dates	x		Business Process Development	-

For this master's thesis the selected interview method was semi-structured interview. Semi-structured interview was made as a two-step interview. The first interview round was an initial interview round, where the main focus was on getting background information in legal, tax and finance points as well as on identifying the main focus areas for interview round two.

Interview round 1

For interview round one was made seven interviews, from which six were one-on-one interviews and one a group interview for two persons. In this interview round insights were gained from master data, legal, planning and control and tax and customs point of view, as well as from consultants in bio related topics and topics

regarding ERP architecture issues. All of the persons interviewed were either managers, directors or specialists in their field with several years' experience. As a result from the first interview round was a starting point for interview round two as well as answers to questions such as; what are the motives or integration strategies for subsidiary merger in the case company, and how on ERP structural level the merger affects the ongoing ERP integration. As a result of this, for interview round two was left questions such as how the merger affects specific company functions in ERP, and what are the areas inside those that are the most critical for ERP integration success following a subsidiary merger.

Interview round 2

Interview round two focused on standard operational functions, such as inventory valuation, reporting and analysis, logistics, finance, sales and supply, bio product issues, production and access rights, which were selected based on the interview results on round one. The aim was to find from each area the biggest questions and most critical areas that need to be resolved in the integration process. The main goal was not to find answers for the raised questions but to find a starting point for the implementation.

4.4 Data analysis

In the data analysis the target was to compress the results of the study and to structure the findings. This provided easier understanding of the results. The main data analysis method in this study was qualitative content analysis. The aim was to form a description of the phenomenon that is relatively easy to understand. After analyzing the data with qualitative content analysis, the results could be compared and merged with previous research. Another type of content analysis is quantitative content analysis. (Tuomi and Sarajärvi, 2009)

Qualitative content analysis aims to analyze the data, or content, based on a verbal description. Qualitative content analysis supports the aims of exploratory study, as it provides flexibility in the analysis and the researcher is able to focus on intangible

meanings, which could possibly not be identified in quantitative setting. (Tuomi and Sarajärvi, 2009) The analysis of this study started with focusing on interesting insights, basing the viewpoint on the findings in the literature research. The main focus is on the success factors in the research context and the phenomena and observations around those. Also, other possibly interesting and important insights have been identified and analyzed further, if they have been seen to have value when mirroring to the results of the literature research.

4.5 Reliability of the results

Case study has three principles in ensuring the reliability of the method: utilizing diverse research material, setting up a database of collected material and creating a chain of evidence (Yin, 2009, p. 101). The first principle is fulfilled by utilizing a vast amount of literature material for the literature research and interviewing a numerous amount of people in the case company. Having interviewees from several departments and several focus areas increases reliability, as different interviewees may have differing viewpoints on the effects of the merger in the ERP implementation, for example differences in the viewpoints of oil products and renewable products business areas. The reliability is weakened by having only one case company in the research context, as this may mean that the results can be applied only to that company. The second principle is fulfilled by having a references table, which is presented at the end of this study and having the interview transcripts in one database. Although the data is not public, it can be obtained from the researcher. The third principle is fulfilled by describing the research methods and process thoroughly in chapters 1 and 4.

Some of the interviewees expressed that the interview questions were difficult to answer due to the insufficient knowledge on one of the areas. In other words, interviewees from the business side had difficulties with questions regarding the ERP project and interviewees from the technical side had difficulties with questions regarding the business side. This may have had its effects on the validity of the results of this study, but having interviewees from each side should ensure the

validity of the results. The validity could be increased by interviewing other companies in the same industry and the same situation.

5 CASE COMPANY RESTRUCTURING

In this chapter the case company of this master's thesis, Neste Oyj, is introduced first briefly and the results from the semi-structured interviews are described. These results are presented in two separate subchapters, from which the first one 5.2 describes the merger project in the Neste Corporation and subchapter 5.3 ERP Integration goes through the ERP project from basics to the factors affecting ERP integration success based on the most critical areas identified through the semi-structured interviews. In all the chapters 5.1, 5.2 and 5.3 is presented answers to the research questions either partly or whole. In next Chapter 6. Research Analysis and Discussion is presented a summary of the research answers, final analysis as well as further recommendations.

5.1 Case company briefly

Neste Oyj (NESTE, Nasdaq Helsinki) is a Finnish based oil company, which main business areas are oil products, renewable products and marketing and service. In year 2017 Neste's revenue stood at 13,2 million Euros, and Neste was on the second place on the Global 100 most sustainable companies in the world -list. Neste's product range in oil products involves diesel fuels, gasoline, aviation and marine fuels, light and heavy fuel oils and base oils for example. All of Neste's oil products are refined in Finland, Porvoo and Naantali plants, and base oil also in production plant in Bahrain with a total refining capacity of 15 million tons per year. In renewable products Neste's main product is renewable diesel, which is produced in Porvoo, Rotterdam and Singapore refineries, with a total refining capacity of 2,6 million tons per year. Besides the refining capacity Neste also has a large scale network of service stations in Baltic Sea region, where Neste serves in addition to customers, also retailers, heating oil companies, fleet customers, industry and agriculture. (Neste www-pages, 2018)

Currently the oil industry, Neste Oyj among them, is going through turmoil due to the new regulations in carbon dioxide emissions. In the fight for less emissions

Neste is in a good position, as Neste started developing renewable fuels in the 2000's among the first oil companies. Already from the whole company's revenue half is generated by renewable diesel, despite the fact that the production capacity is much lower than in fossil fuels. Currently Neste is the world's largest buyer of animal fats and industrial side streams which are produced globally as renewable fuels are made, for example, from slaughterhouse waste. As a result, Neste is also the world's largest producer of renewable diesel refined from waste and residues. However, still for a long time fossil fuels are important to Neste, but not infinitely. (Neste www-pages, 2018)

Currently Neste Renewable Fuels Oy (NRF) and Neste Singapore PTE Ltd. (NSG) form the main part of Neste renewable business area and are subsidiary companies to Neste Oyj. Neste Oyj is the larger parent company under which are located basically all support functions and finance for the whole corporation, as well as oil products business area as a whole. In the current climate where renewable products business area is vital for the whole corporation, Neste aims to bring Neste Renewable Fuels Oy under its parent company with a subsidiary merger, so that NRF dissolves and only Neste Oyj and Neste Singapore PTE Ltd. remain in the merger. Below in **Figure 10** is presented Neste Oyj's business areas.

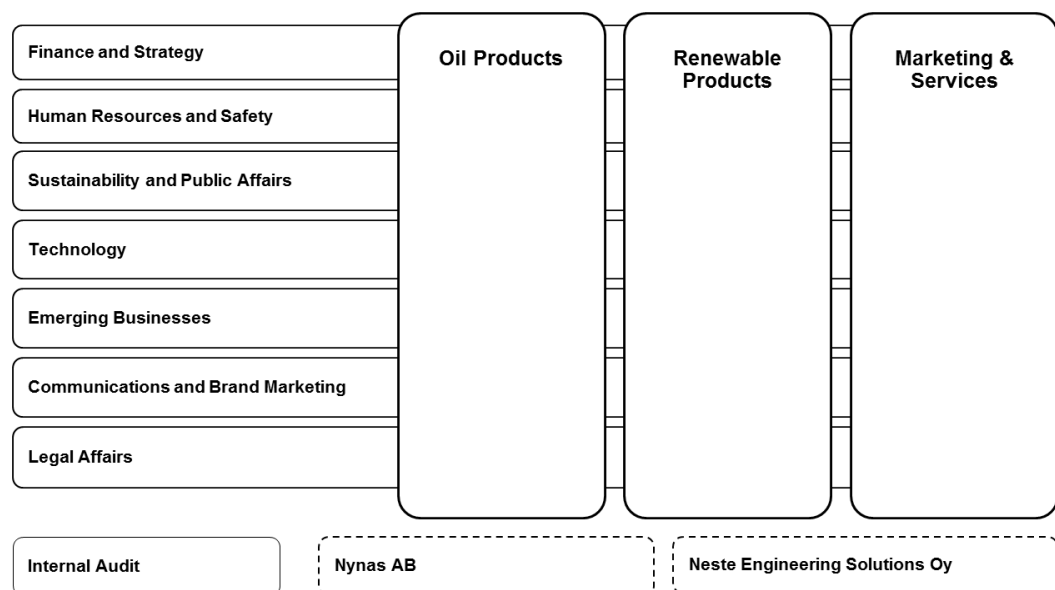


Figure 10 Neste Oyj business areas and common functions

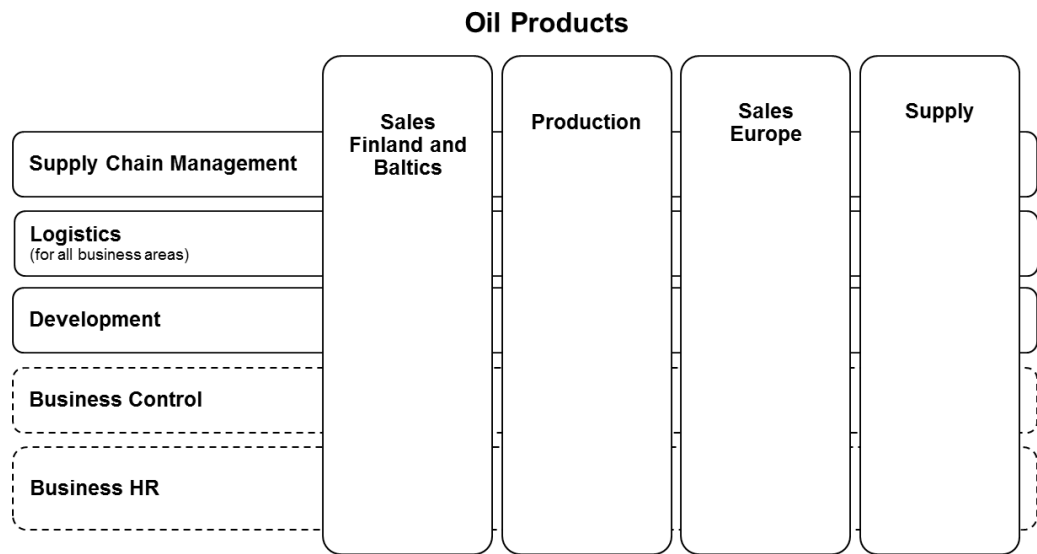


Figure 11 Neste Oyj's oil products business area layout

From the **Figure 11** can be seen that also in the current business area layout, for example logistics are handled for both business areas from oil products business area, so the business areas are tightly linked, and sometimes overlapping each other even though the products and product requirements are different. Below, in **Figure 12** is in turn presented the renewable business area at Neste Oyj.

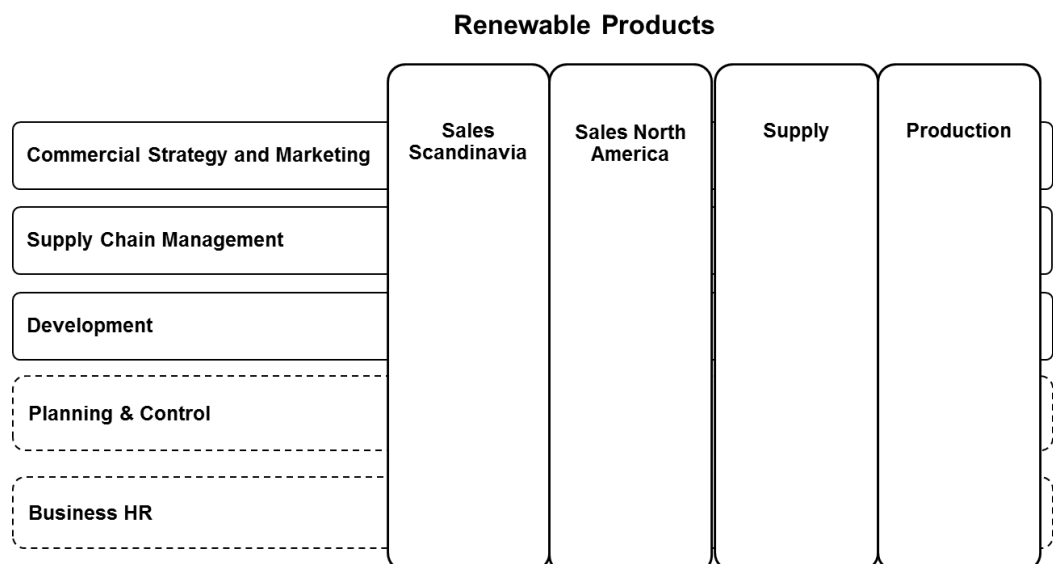


Figure 12 Neste Oyj's renewable products business area layout

At the same time with the NRF subsidiary merger to Neste Oyj, the whole Neste Corporation is going through a large enterprise resource planning system reform,

which includes also Neste renewable business areas. Currently Neste's oil business area is already implemented to the new ERP system SAP and SAP configuration is made on the terms of oil products, so it is important to find out first, how the merger affects the SAP implementation and secondly how the renewables business area differs from oil products, so that those differences can be taken into account when planning the implementation to SAP for the renewable products business area. Through these case company questions the aim is to answer also the master's thesis research questions.

5.2 Subsidiary merger at case company

In Neste Oyj's case, the merger is a reconfiguration process, where a subsidiary company is dissolved into the parent company in a way that the underlying structures are not modified. As a result no new culture as such is implemented, but due to the new ERP system new processes and systems are. According to interviewee B, in Neste's case, subsidiary merger also helps to streamline and rationalize the operations inside the corporation. From a legal point of view, the merger of Neste Renewable Fuels Oy into Neste Oyj is an absorption merger and labeled under its sublabel subsidiary merger, where Neste Oyj owns beforehand all of the shares, stock options and other special rights entitling to shares of NRF. As a result, interviewee B described the subsidiary merger process also quite simple and flexible in Neste's case.

When analyzing the relationship between NRF and Neste Oyj, the merger may be analyzed as a horizontal merger, since the two companies have similar products and services. However, as the two companies are already in subsidiary relationship together, the merger doesn't result in decreasing the number of competitors in the market space or for the purpose of market expansion. Instead, the subsidiary merger does maximize financial capabilities as the corporation structure is changed to be more efficient. Other motives for Neste's subsidiary merger can be sought from the macro-level, where the whole industry is going through a large change towards more sustainable products and processes because of new, strict regulations and

laws globally, technological development and also due to new, more environmentally conscious customers. All of these together put more weight on the company's renewable business area, where NRF and Neste Singapore PTE Ltd. are located. As the renewable business area is the focus point and growth area in the future for Neste Oyj, it makes sense to pursue to have it under the main company at least partially and not as a subsidiary company. As the renewable business area also brings a large share of business revenue to Neste Oyj despite the smaller production capacity, it can be said that oil prices are also one trigger for the merger, as renewable fuels can be seen having a larger earning capacity when compared to oil products business areas. In Neste's case also increased corporate flexibility, reduced conflicts of interests and gains in productive efficiency can be seen as motives for the merger. (Interviewees B, H and Q)

Originally Neste Renewable business area was transferred into the now existing company Neste Renewable Fuels Oy in 2008. The separate company was formed in order to establish a separate subgroup to renewable division and to better develop the various projects, management and administration of the renewable fuels investments and businesses. Also, one of the goals was to ensure the availability to an easy initial public offerings. Currently, however, the lack of clarity on day-to-day business in Finland is proving to be challenging. At the moment Neste Renewable Fuels Oy manufactures renewable fuels production in Porvoo in addition to having an own refinery in Rotterdam, which means that in Porvoo refiner there is production capacity for both companies, Neste Oyj for oil products and NRF for renewable fuels products. Also, currently NRF's road to Finnish markets goes through Neste Oyj, who in turn sales the products to Neste Marketing and Services where it is finally transferred to the client. As a result, the whole chains management employs both in NRF and Neste Oyj, both companies own Neste renewable diesel licenses, and there are several internal and external agreements, invoices and expatriates. Also cost allocation within the group for the two companies is a big work effort. (Interviewees B, H and Q)

As a result, Neste Corporation was left with three choices: to keep the legal company structure as it is, merge NRF into Neste Oyj or transfer certain Finnish renewable fuels assets of NRF into Neste Oyj and remain the rest of NRF as an interim company. From these options, the second one was selected as it clarifies the roles of renewable fuels employees and the renewable fuels business in Finland, reduces the amount of reporting units, removes the amount of internal invoicing and agreements and brings clarity to the intellectual property rights which will be owned solely by Neste Oyj in the future. The only cons were related to merger transaction itself, which requires the change of NRF Oy's business ID, update of agreements, merger documentation, the merger procedure within the Trade Register, the environmental permits and the customs duty permits. (Interviewees B and H) According to interviewee B, all of those are minor challenges and require only some manual work.

However, interviewee B added, that in Neste's case the challenge for the merger process comes from the ERP implementation timetable as the merger timetable needs to be fitted with the RP deployment process and its progress. In this sense, the merger process is the easier of the two processes to manage. The interviewee B described the connection between merger and RP deployment as following:

"The most significant impact that ERP has to the merger is that the legal merger is scheduled purely by the ERP schedule, e. g. Oyj cannot be merged with NRF before RP [business area] goes to SAP. So if ERP reform did not exist, the legal merger would already have happened."

It is also important to note, that since the two companies are subsidiary related, the ERP implementation would happen to both of them apart from whether the merger happens or not.

5.3 ERP implementation at case company

Neste Oyj is implementing from the various solutions that SAP offers for information system the SAP Oil and Gas Solution. In **Figure 13** the various SAP solutions are presented.

Aerospace and defense	High-tech	Mining
Automotive	Higher education and research	Oil and gas
Banking	Hospitality services	Pharmaceuticals
Chemicals	Industrial machinery and	Postal services
Consumer products	components	Professional services
Defense and security	Insurance	Public sector
Engineering, construction, and operations	Life sciences	Railway services
Financial service providers	Logistics service providers	Retail
Healthcare	Media	Telecommunications
	Mill products	Utilities

Figure 13 SAP Solutions (Beagle support material)

The SAP Oil and Gas Solution offers several key functionalities that differ from other industry solutions and are especially characteristic and vital to oil business industry. Below, in **Table 5** is presented the several key functionalities, which also describe oil business industry's differences when compared to other industry areas.

Table 6 Key functionalities of the SAP Oil and Gas Solution (Beagle support material, SAP www-pages)

Short name	Name	Use
HPM	Hydrocarbon Product Management	Allows to manage product in various unit of measures, e.g. liters in 15 degrees, kg, TO in AIR and TO in VAC. Also encompasses the silo management system which is a functionality for managing inventory in tanks, and to compare that to the book stocks. Also enables determination of gains, losses and goods movements.
MAP	Marketing Accounting and Pricing	Use of formula prices, quotations and exchange rates.
MCOE	Marketing, Contracts and Order Entry	Fast order entry, requirement for high volume business transaction. Helps to achieve various methods of delivery with the possibility to various delivery plants and large customer base.
TDP	Tariffs, Duties, Permits	Used for excise duty.
EXG	Exchange Functionality	Used for special agreements with counterparties as buy/sell, borrow and loan with netting or without netting and throughput agreements.
TD	Transportation and Distribution	Used for truck movements.
TSW	Trader's & Scheduler's Work Bench	Used for massive means transactions.

In Neste Oyj's case the full integration of information systems is achieved by tailoring a new information system SAP which blends together features of existing systems, but where business areas are kept separate. In other words, in the business integration between renewable products and oil products there is not a full integration but a symbiotic approach.

In total the SAP business solution was described to bring Neste the following advantages and fulfill Neste's SAP implementation goals (Neste Beagle implementation project, 2017):

"By implementing the SAP business oil solution Neste's goal is to implement harmonized end-to-end business processes, deliver coherent information and solid ICT-solutions as well as transform the way Neste operates its businesses and utilizes information."

Before SAP Neste had several legacy systems in place, which were linked to each other. The most important ones were Jawa, which is a system for physical transactions, Salsa for commercial transactions, Vaha for stock book-keeping and Fina for finance. As a result the business processes were divided between several systems, the process wasn't harmonized or up to date and the information wasn't coherent. (Beagle support material, interviewee A) Below in **Figure 14** is shown a graph of the physical and commercial information flows between the new ERP solutions and the old legacy systems in an usual business case where first the sales contract between Neste and customer is created, followed by the sales delivery, billing, accounts receivable and inventory valuation.

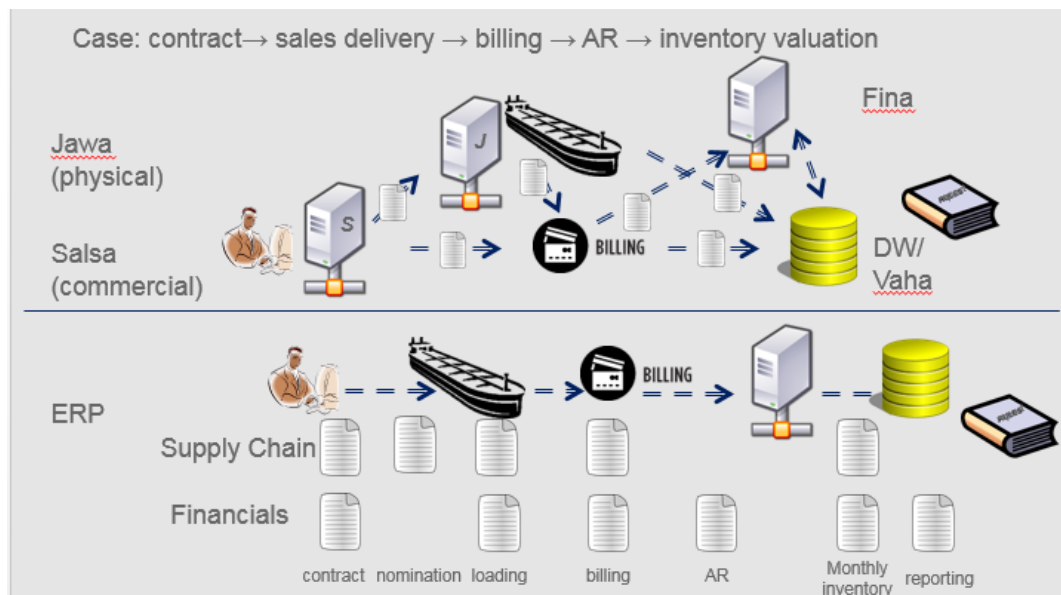


Figure 14 Comparison between Legacy systems and the new implemented ERP -system (Beagle support material)

By choosing SAP as the new ERP system, Neste was searching the "best practice", as SAP is widely the most used ERP-system among oil and gas -companies, due to the fact that it helps companies in oil and gas industry to level the tough global market environment, where the companies have no influence on market forces like volatile crude oil prices and compliance with legal requirements. For example interviewee A described the advantages of SAP when compared to Legacy systems:

"In old system everybody could see everything, if it was just in Common functions it could be used and changed, which means that the user's level of expertise was emphasized."

Interviewee I in turn added:

"Now in SAP [master data] everything is defined in advance, versus the old system where everything could be fixed afterwards for example in reporting."

A successful SAP integration is made at a thoroughly planned SAP implementation project. At Neste, the SAP implementation project has been a lengthy process, consisting of the actual implementation project, called Beagle, and two pre-projects, called BDEAR and Eagle. In BDEAR the goal was to establish a development roadmap for different business processes and system projects and Eagle was for the selection of the new ERP -system and for the forming of implementation partner relationships between the consultant companies who offer the ERP architecture to match the business processes that Neste offers. (Interviewee A) Interviewee A describes the Eagle project following:

"The Eagle project sought to identify the harmonized chains / processes that can be used to transport the base mass in the system, after which it was possible to build the few specialties which add value to the company. Thus, processes that are common to all business areas were identified, as well as all specialties associated with different products."

The actual SAP implementation project Beagle is the largest of the projects and it includes the actual implementation for all Neste companies, business areas and functions including planning, testing, deployment, go-live and follow up-processes. Also the renewable products deployment is located under the Beagle project, where it is the fifth step of a total of six deployment phases. Below in **Figure 15** is shown the six Beagle project deployment phases.

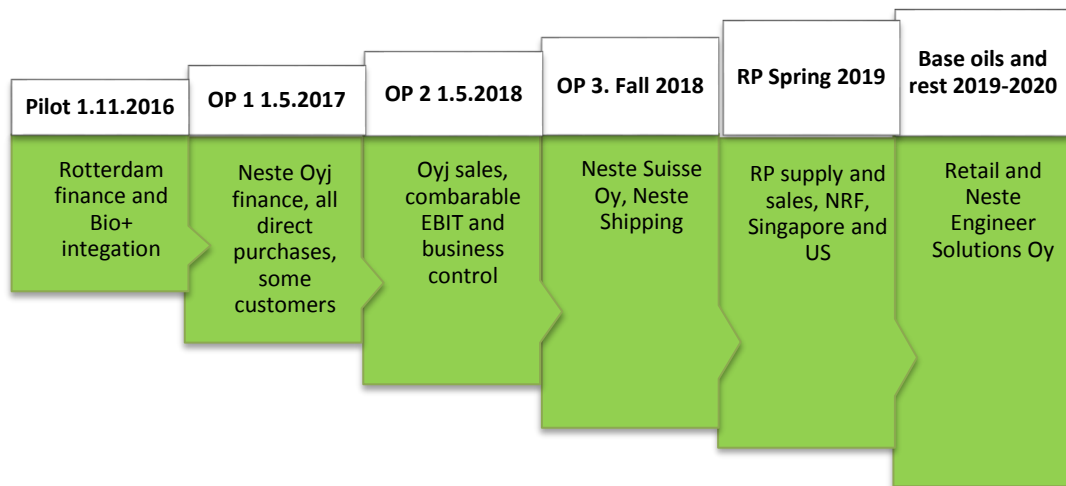


Figure 15 Neste Beagle deployment phases (modified from Beagle support material)

The actual Beagle team consists of several groups, which have different responsibilities, for the different phases in the deployment project, starting from project steering, program management to the actual solution core teams and support functions and teams. Below, in **Figure 16** is presented the organizational model for the whole Beagle project and in **Figure 17** an example of the Beagle core teams inside the Beagle solution architecture, which builds the solutions for business requirements.

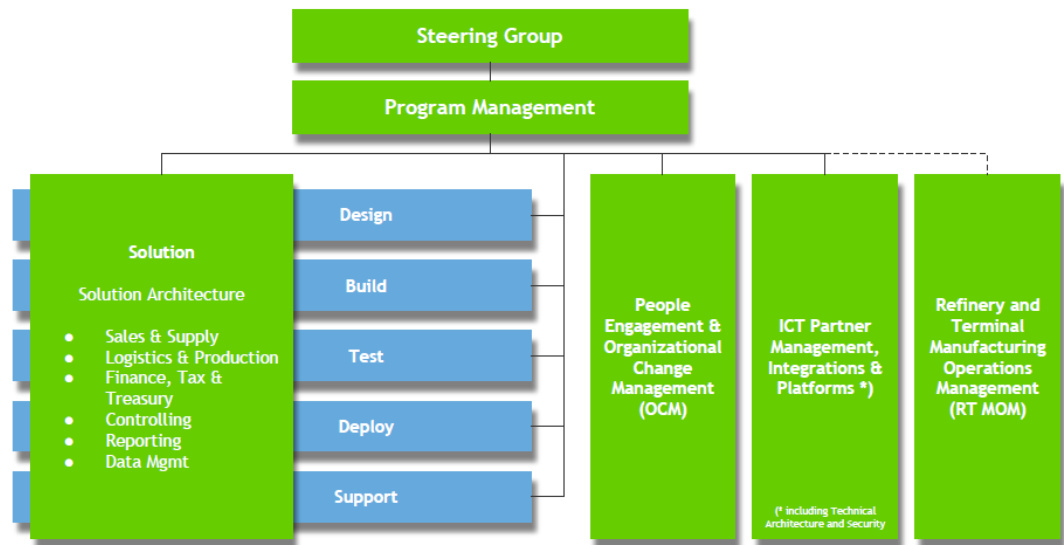


Figure 17 Organizational model of the Beagle program (Beagle support material)

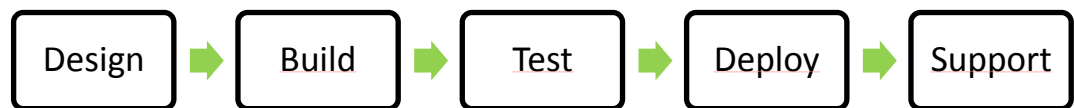


Figure 16 Beagle Core teams (Beagle support material)

As the renewable products implementation is already the fifth deployment phase of the whole Beagle project, the program configuration, integration teams, project process and integration strategy and planning are already well tested in practice, and thus are not the challenging and problematic part of the RP deployment. Also the fact that the previous project phases were highly successful supports that. As interviewee A said:

"As a whole, the project is a learning journey, where we are already quite advanced."

For those reasons, those things are overlooked in the empirical part of this work, even though they are highly important and essential for a successful implementation project. In turn, the critical themes can be found from the more technical aspects and from the enterprise structure which are formulated from the differences in the business units and from the challenges in the legal company structures, which SAP configuration needs to follow. In addition to that in the interviews the critical

themes were thought to be found under the themes master data, inventory valuation, reporting and analysis, logistics, finance, sales and supply, bio product characteristics and production and access rights, so the findings under those themes are presented next, starting from the enterprise structure.

Enterprise Structure

From the various modules that SAP offers in Oil and Gas Solution, Neste chose to implement the following modules as presented in **Figure 18** for the Neste Corporation.

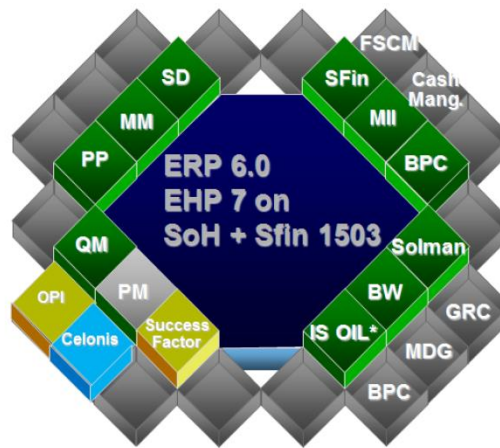


Figure 18 SAP enterprise structure for Neste Corporation

The selected modules include from down-left first SAP implementation process related structures; Celonis for modeling the information flows between several SAP modules, OPI for operational process intelligence, SAP success factor, PM for project management and QM for quality management. On top left there are structures related to organizational units which are required in order to manage the SAP system. These organizational units can be assigned to single module like SD (sales and distribution) which is assigned to sales organization, or to several modules like MM (materials management) and PP (production planning) which are assigned to plants. At top right corner of the **Figure 18** are the structures related to finance, for example SF (simple finance), which is a module for managing finance and accounting, and is used to perform financial operations and accounting in real time and reporting using business intelligence tools. In the same structure there are

MII for manufacturing integration and intelligence, BPC for financial business planning and consolidation, cash management and FSCM for financial supply chain management. At bottom right corner there are in turn the structures related to master data and SAP users. These structures include Solman (solution manager) which is an integrated end-to-end platform, managing the application lifecycle and running the several SAP solutions, BW (business warehousing) which is a combination of databases and data management tools, MDG for master data governance and GRC for governance, risk management and compliance. (Beagle support material, SAP www-pages, 2018)

Even though SAP is having a certain structure set up across the various modules in organizational structure, the key element is always the company code, under which all of the functions are handled. In this master's thesis there is special emphasis set on the organizational enterprise structure of the group of four SAP enterprise structures as it is essential in the case where company merger is added to the SAP implementation. Interviewee G described the company code as:

"The company code is the legal entity and independent accounting unit, where all of the balance sheets, profits and loss accounts are created. It would be easiest if one company was one legal company physically in one country, we could just make one model, add the data inside and apply it to other Neste companies as well in other countries."

However, in Neste that is not the case, as the subsidiary companies work in different countries and can have operations from different business areas. Also, the business area structure which was showed in Figures 10, 11 and 12 is causing some problems, as in Neste organization the business areas are in charge, and under the business areas there are several companies. For example under the renewable products business area operates two legal companies, Neste Renewable Fuels Oy and Neste Singapore PTE Ltd, which both would have their own company codes in SAP. In that case, it's not possible to make a model, where there are so called company silos, which have their own business areas and reporting for example. (Interviewees A, G) In **Figure 19** is shown the common SAP enterprise structure, which is the base for all SAP ERP systems despite the selected SAP solution. The

more specific description of each key organizational element in the SAP enterprise structure is showed in Appendix 1.

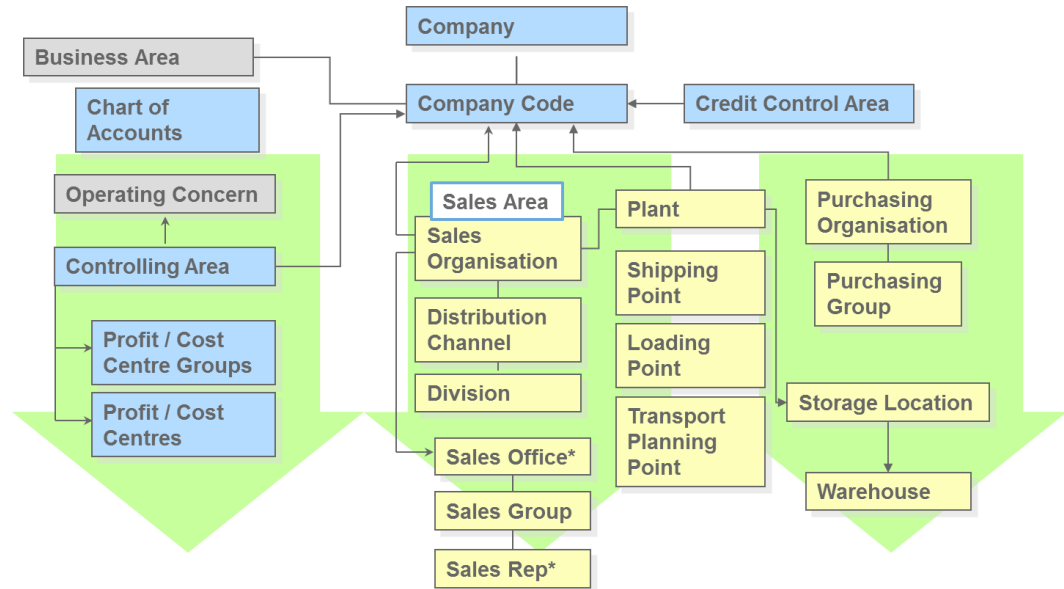


Figure 19 Common SAP Enterprise Structure (SAP.com, 2018)

Interviewee A summarized the situation with the common SAP enterprise function and the merger following:

"In the Neste's case, we have a situation where we are implementing a renewables business area, which is completely different when compared to the before implemented oil business areas. When we implemented Neste Oyj, it was at the same time its own legal company, and under it operated one business area, oil products, so we added one company code to SAP. Now we have first a merger, after which we have two business areas [oil and renewable] functioning under one legal company Neste Oyj, and in addition to that, Neste Singapore PTE Ltd., which operates only in renewables business area. So, in the RP deployment phase, we need to bring under Neste Oyj completely new RP functions, and also add a whole new company Neste Singapore just for RP to SAP."

In other words, as interviewee F described, in RP deployment phase first there is a need to identify the specific RP characteristics which differ from oil products, and after that expand the RP products and materials to all company codes that need those specific materials in their operations, as the materials and products are also linked at company code level in SAP.

Master Data and Integration Process

Several interviewees including A, O and Q pointed out the timetable and overall timing between the merger and renewable products SAP implementation. The main question that was highlighted, was what happens if the merger happens either before or after the RP implementation, as either way it would cause some problems, at least double work and in worst cases it could require even a separate project, where the migration would happen. Thus, the consensus between the interviewees was, that the merger should happen at the same time as the RP SAP production go-live.

When talking about the practical RP migration phase and its connection to the merger, the actual merger is formed from a clear slate in the ERP systems. As a result the history of the old disappearing Neste Renewable Fuels Oy stays in the old ERP legacy system, where the business area was handled as a separate subsidiary, and to the new SAP ERP system transfers renewables business area as a part of the parent company Neste Oyj. Interviewee A highlighted that in practice it would have been easier to merge the two separate entities to one, if they both were already in SAP. In that case the merger would show more clearly for example in finance, when the same system would have the same details both sides of the merger.

In practice the actual planning of the implementation starts from the processes, and from the identification of the common structures and procedures in the merging companies. For example, according to interviewee A one of the most challenging process situations is, when there are three completely different business areas with different processes to be implemented. In a case like that it would be hard to get the system to support each of these processes, and instead the main characteristics needs to be identified and the focus needs to be on the big picture so that as a result one business process could fit all with a few add-ons. If nonetheless the focus is on the detailed business processes, it may cause long-term system maintenance in order to work, which could affect the success of the ERP system implementation, interviewee A highlights.

Also, according to interviewee A, the current implementation order between the different Neste companies and business areas may be challenging. Interviewee A described the implementation order following:

"The easiest implementation order would have been to implement everything at the same time, but it was the businesses decision to implement the whole corporation in sections, as that way the risks could be handled easier. If we could have chosen, renewable products would have been implemented first, but there were no resources, so the parent company had to be implemented first in sections. The first section was as a result the [oil products business area] supply, followed by the sales, so that the cash flow to the company could be ensured. From the Beagle projects viewpoint this was extremely challenging, as supply was for a year in the new system and sales still in the old, which meant several systems in place at the same time. But again, a smaller risk than to implement the whole parent company as a whole, and risk things going sour."

As a result, technically the implementation order matters, and as a rule could be said the bigger the implemented entity, the better, even though any order is possible to execute technically. At the moment when the master data behind the system is not empty after already several production go-lives, the new data needs to be added behind the data that is already in use in production environment, until the RP go-live day is here and all the data can be taken into use. According to interviewee A, it is also good to note, that all the data is fed four times to the system during each implementation round. With the exception of the production load, the data is always loaded first into a test environment, where the key and end users training will take place. As a conclusion, the master data is an important part of the implementation phase, because it affects many aspects, including the system testing. Proper, harmonious data also gives more control to every process inside the business area.

However, the increased control may also cause some challenges, as the master data needs to be correct, or the business processes may stop. This may be for example the result of the fact, that the materials flow through the plants in SAP, and the materials are only opened to the plants where they are used. Also the transportation systems have a strict definition, and the materials can only go through the pre-

defined transportation routes. For example, a material assigned for in-tank deliveries cannot be loaded into a vessel without doing some adjustments to master data, as well as a material can't be used at a plant to which it is not assigned, according to interviewee A.

Another challenging aspect is the right level of compromise between packaged functionality and the requirements presented by the business units in the whole implementation project. One reason why SAP was selected as the Neste corporations ERP system was to get the standardization and "best practice" that SAP offers. However, at the same time Neste wants also to maintain some flexibility, and have the possibility to add Neste specific solutions to the otherwise rigorous system. On the other hand the business units can't be given too free hands to modify the system, as the more there are Neste specific modifications in place at the system, the harder it is to keep the system updated. Especially, in the cases where SAP brings updates to the whole industry package they offer, the company specific modification can cause challenges, as the updates don't take those into consideration and some extra testing and maintenance could be required. As a result, even with the specific modifications, the right degree of compromise between the SAP package functionality and the Neste modifications is important, according to informant A.

Reporting

Interviewees C and D pointed out some common observations regarding reporting. First of all, reporting is formed from several large sections, for example from finance reporting including comparable EBIT reporting and profitability reporting to mention a few examples. In practice, every business unit and process has several reporting needs, and the reporting is always done on the trajectory through these business areas and processes. According to interviewee C, already at the current ERP implementation situation there has been noticed several challenges, for example questions like: Do we get in the future the reports straight from SAP system or from some other system? and Are the different business unit parts so different and complex, that after all the reports needs to be built by hand also in the

future at Excel? are still unanswered. According to interviewee C, these questions raise from the fact, that already in oil products deployment phase it has been noticed that full automation in reporting is out, and the reports need to be able to be modified afterwards. As a result it has also been noticed, that the already happened aspects are easy to report automatically, but the forecasting reporting is more challenging.

However, one of the biggest and most important issues in the merger in reporting is the finance reporting, which needs to be modified to fit two different business areas inside one legal company. According to informant D the biggest change when compared to the pre-merger situation is that the reports can't be taken any more based on the company code, instead the reports need to be sought in the future through sales and distribution channels for example. When talking about the differences between oil and renewable business areas, one of the biggest one that affects reporting is the different business models between the two. Oil products uses at the moment a benchmarking model called netback, where the result is compared to a reference and as a result the performance can be analyzed. In this model the acquisition costs are not taken into consideration, as OP doesn't have monitoring obligation unlike the renewable business area. On the other hand, in RP business area, profitability is more based on acquisition costs, as there is no clear reference price available, as the products are not commodities in the same way as in OP business area. However, according to interviewee D, in the future the reporting is not as defined as it is now with two legal companies, as in the future it will be just company's internal reporting.

Another challenge is the comparable EBIT reporting, interviewee C highlights. By comparable EBIT (Earnings Before Interests and Tax) is meant a way to measure company performance excluding external factors like inventory value changes. Again the challenges are caused by the different methods used in the business areas. For example in RP the comparable EBIT is allocated based on last-in-first-out method (LIFO), and the IFRS is based on first-in-first-out method (FIFO). When compared to OP, there the supply is reflected on Brent - pricing quotes, and IFRS

on FIFO method, so the already implemented OP design is partly, but not fully usable to the RP design.

When discussing the analytics systems implementation, none of the interviewees could think of aspects that the merger has effect on, as the origin of the data inside the analytics systems does not matter. For example with the modeling system Celonis it is possible to analyze and pinpoint information flows between the systems (e.g. how information is moved by nomination in SAP), the number of tickets made to service desk and for example the response times to those tickets. But as the origin of the data loaded to the system does not matter, the interviewees did not recognize analytics systems as a crucial factor in the post-merger systems implementation.

Bio product management

Interviewee E highlighted that the concept of bio product management consists of three main sections in the renewable products business area: the bio product steering, the follow-up of the bio distribution obligation that Neste has, called bio mandate, and the overfilling of the bio mandate, which can also be called the biobank. From the biobank there is also a connection to traders and to sales. However, according to interviewee E, the question that remains is, what is the role of RP implementation in the bio product management, as the new bio management tool called Sustainability Compliance System (SCS) is already implemented in the previous integration phase, OP 2.

Currently the bio products are defined by the so called bio criteria's, which are based on the actual physical product quantity, and can be defined in kilojoules, that the quantity brings in energy. In other words, the bio criteria needs to match the actual physical quantity, for which the new tool SCS has been established, so that the bio criteria's can be steered and followed back-to-back with the physical quantity flows. Regarding the first section, bio product steering, currently oil and renewable products have different steering methods, OP steers based on the physical components and RP in turn based on the bio criteria's. According to interviewee F, the question that surfaces as a result is: How the steering is done in the future? At

the moment Oyj has its own planners for diesel and gasoline, and RP its own for bio products. It can also be asked, that in the future is bio criteria steering possible in OP as well, as the two business areas are in the future under the same legal company, interviewee F asks.

Regarding the second section, bio product distribution obligation (bio mandate), Neste Oyj has the bio mandate to markets at the moment, which will not be removed in the future after the merger, as the obligation is defined by Finnish law. At the moment the distribution chain in Finland to the markets is following: NRF - Neste Oyj - markets, and after NRF as a company will drop off from the chain, it will be just Neste Oyj - markets, as the renewable products company is already part of Neste Oyj. According to interviewee F the ownership of the bio mandate is currently OP supply chain management, but the steering obligation is handled in the RP team, which raises the question that who owns the bio mandate in the future, after the merger? Also, as the bio volumes are growing, and their tracking is hard even at the moment, how will this affect the future business model and ERP systems? Probably the growing volumes will require changes in the future in both areas, for which reason it is important to plan and implement a system that can answer the futures needs as well, interviewee F underlines.

The third, and last section was the biobank which is formed by overfilling the bio mandate. Also the transfer pricing of the bio bank is closely connected and part of the bio bank, according to interviewee F. The bio bank is formed when Neste Oyj is overfilling in the bio criteria distribution, and the criteria is stored as a result in the bio bank. At the moment this bio bank is in Excel form, as well as the transfer pricing, which will be the case also in the future despite the new SCS tool, as it was decided the Excel-tool is the best option due to its complexion. However, the future merger is causing some problems at least to the pricing, as the transfer pricing will disappear from the pricing formula if the two business areas are merged together and there will be no transfer from one business area to another anymore. At the moment, for example OP is paying RP the value of the renewable diesel, taxes and premiums, so the question is how the bio bank will be priced when the external actor disappears. Of course, if the two business areas can be kept separate even

under one legal company, the old transfer pricing could be kept as it is, just by taking out the taxes which do not need to be paid anymore as there is no legal company border anymore, interviewee F ponders. Interviewee K described the situation with two separate business areas under one legal company Neste Oyj following:

"In the future the transfer pricing will be much easier, as NRF is merged, and we don't need to issue any internal recharge invoices between the two Neste companies, we only need to separate [from Neste Oyj] the other renewable business company which has not merged, Neste Singapore PTE Ltd. In the future, for example the transfer from Rotterdam [NRF] to Finland [Neste Oyj] could be handled only as an internal transfer posting in accounting."

From business control perspective the legal companies mean little, as they are divided into parts from which are formed the business areas that are followed, interviewee K highlights. As a result, the business areas are the more important aspect, when discussing transfer pricing. For example, when the product crosses the business area border, in the comparable EBIT calculations are made a correction, for example when NRF sells the renewable diesel under RP business area to Neste Oyj (OP business area), who in turn sells it to Neste Retail, there is a need for two comparable EBIT corrections. This is linked to the transfer pricing as well, and to whether in the future RP goes still through OP business area, in which case there would still be the need for the comparable EBIT corrections and transfer pricing. So the question is, which business area gets the profits after the merger? And is there a reason, for example from tax law, that NRF can't sell the renewable products straight to Finnish markets through Neste Retail at the moment? In the future, when RP is part of Neste Oyj, could the RP business area sell the products straight to Neste Retail as well? These questions were raised by interviewee K.

Inventory/Stock valuation

When discussing the valuation of inventory, the interviewees J and K highlighted several discrepancies between oil and renewable products business areas which could affect the SAP implementation. As a result the question that was asked by interviewee K was, that since the business areas operate with different ways to value the inventory, what kind of effect they have on each other after the merger? This again raises the question whether in the future will there be two different inventory ways under one legal company, and whether it is even possible two maintain two different inventory ways in the new system? The biggest differences stem from the fact that RP products are always made to order when OP's products are produced without order as there is always a customer to whom to sell the product. In this case, on the OP side, the inventory significance is smaller than in RP side, where it is more important that stocks are close to the customer as the products are made to order. It is also good to consider SAP implementation in mind that renewable products and base oils, which are implemented at the same time are closer to each other's inventory valuation requirements wise, than what renewable and oil products are to each other's, interviewee J highlights.

Another big difference between RP and OP is the fact that in RP there is a greater need for tracking the components than there is on OP side. In RP there is a need to see each stocks bio bank levels separated, which is linked to the physical product component levels. Interviewee J describes the different inventory valuation ways following:

"In RP side the product is valued based on the bio criteria's, which are supposed to match with the physical product. In order to keep track, the bio criteria's are matched with the physical product every month, which is called physical inventory. If the level of bio criteria's do not match with the level of physical product, we need to reduce the criteria's which affects straight the whole EBIT calculations and the whole forecasting. On the other hand, in OP side the inventory is valued straight based on the physical levels of physical product, so it's much easier."

Interviewee K highlighted also, that RP business area has more raw materials than the OP side has, which all needs to be valued differently. At the moment these feedstocks can be stored physically in the same tanks, and they are separated in inventory by calculating. The products and raw materials also needs to be separated from each other during transportation, which is a challenge for example if the materials are in the same terminal physically little bit blended. For now, the products can be tracked based on the legal company, but how can they be separated in the systems in the future when they are inside the same company. Is this possibly done in a way that the business areas are separated only based on the product? Another aspect to consider are the blend products, which contain both renewable and oil products, partly fossil diesel which is produced under Neste Oyj in Porvoo refinery plant, and partly renewable diesel produced in Rotterdam plant under Neste Renewable Fuels Oy? If these were in the SAP implementation still under separate companies, they could be separated based on the legal company, but after the merger there is a need for another separation way, interviewee K ponders.

Another aspect to take into consideration is the finances point of view. When comparing the business areas finance wise, from the traditional IFRS inventory valuation are found similarities, but the forming of the comparable EBIT is different. At the moment the RP comparable EBIT calculation works in a way that the raw materials are valued under the legal company, either NRF or NSG, where there is added in IFRS world the freight costs, which is based on the distance travelled. Normally the raw materials are transported to the refinery, which is determined again based on the legal company. In addition, if there is a need to calculate customer specific profitability, it is important to define the cost of production either in Rotterdam refinery or in Porvoo refinery, which are again based on the legal company. So the question that remains is, what happens when the RP profit center is combined with OP profit center, under the same legal company? How the business areas can be kept separate, as the legal companies are strongly showing in finance? These questions and thoughts were raised by interviewee J.

When constructing the corporations result, it is necessary to understand the construction of the income of all the subsidiaries so that all internal cash flows go to the right cost centers, interviewee K describes. In the future after the merger these cost centers must be kept separate as well, and made a transfer pricing adjustment because the business areas are so diverse that the cash flows can't mingle between the different regions. As a conclusion, the whole way of working needs to be changed, so there is a worry that does someone still see and control the whole picture? Another possible problem may arise from the fact that in SAP one material can be addressed to only one profit center, so for example RP business area diesel can't be addressed to OP business areas profit center. As a result, the current structure isn't workable any more in the future, and for example a diesel blend product, which contains diesel from both OP and RP production plants is going to be a problem, as it raises the question which business areas profit center gets the materials which form the profit for the business areas. However, this question is larger than just SAP, as it can be put under the new business model, to which SAP gives some restrictions. At this moment, the RP production that functions under Neste Oyj in Porvoo refinery plant doesn't have any sales yet in SAP, and only fixed costs, so this problem hasn't arisen in the previous Neste Oyj implementation phases. These thoughts were generated by interviewee K.

Supply Chain Management/Optimization

Interviewee I described the differences between OP and RP supply chain management and supply chain optimization. The biggest difference between these two business areas is the different steering methods, as OP is steered based on components, and RP is steered based on the bio criteria, interviewee I highlights. However, this is also a possibility for Neste, as in the future there is a chance for a better optimization, when the business areas are part of the same entirety, which also means that the criteria's are made available to both areas automatically, which results to more diverse usage in supply and sales. On the other hand, the business areas are different and they are still managed and steered differently, which results in the problem of how to keep the wanted aspects separately, interviewee I tells.

Starting from supply chain planning and steering, in the SCM department at Neste is made both long and short term planning starting from 15 months planning and ending up to one month. SAP implementation and merger wise the planning is probably the easiest aspect to consider, according to interviewee I, as the legal company boundaries are not taken into consideration in it as they are brought in only at the implementation phase when the product moves physically. This is made possible with the set structure, that Neste Singapore PTE Ltd buys everything in Asia region, and as it is transported to Europe, Neste Renewable Fuels Oy always buys everything and supplies it forward. As NSG is kept as a separate subsidiary company in the future, it means that this aspect can stay in SAP as it is now, only the receiving company will be after the merger Neste Oyj instead of NRF, but the actual transactions can be kept still internal.

The merger also doesn't affect any planning equipment and tools, interviewee I ponders, as the RP specific tools that are used don't take into consideration the legal companies, instead they are business area restricted. In other words, none of the tools are NRF specific and would be taken out of use after the merger.

When thinking about the actual production, the only problem may arise from the use of the oil tanks, which are used to store products from both business areas, interviewee I highlights. In reality these tank are owned by Neste Oyj, but they are used to store products which are owned by either Neste Singapore or Neste Renewable Fuels, in addition to Neste Oyj's oil products. All of these tanks are integrated to the Porvoo refinery plant. This raises the question, that how these tanks are handled and the diesel separated in the future when there is a need to evaluate the inventory, or the need to calculate comparable EBIT, when in theory the tank and its content is owned by Neste Oyj, but the content is in reality produced in Netherlands at NRF plant? At the moment it has been made possible by first calculating the Neste Oyj share away, and the rest has been automatically owned by NRF in the system, which is not possible in the future anymore as both are under Neste Oyj. In the future these tanks are probably still kept in shared usage, so what is the data field in the system where the RP and OP diesel and the production

location can be separated and steered to which business areas balance and profit sheet the product wants to be located? This is related to the fact, that in SAP there are no tanks levels, as those are still at the moment in Jawa, the old stock keeping system. Does this fact alone leave out of scope the possibility to have in the same tank two business areas products? And does this escalate even to the fact that terminals should be separated from each other based on the business areas, which is not possible in reality? All of these questions and thoughts were generated by interviewee I.

Regarding the sales chain planning and steering, the basic idea is similar as in supply, interviewee I describes; in reality the legal company is not taken into consideration before the actual physical implementation of the plan. In reality this means, that if the product comes from Singapore refinery, NSG owns it, and if it comes from Rotterdam refinery, NRF owns it automatically. In addition to those two options, there is also a third option, OP business. At the moment RP sells a lot of the NSG and NF production to OP, which sells it in turn to retail distribution through Neste Marketing and Services Oy either as a blend or as a 100 % bio product. In these cases, there has always been an internal trade either between NSG and Neste Oyj, or between NRF and Neste Oyj. In the future, the internal trade between NRF and Neste Oyj will be left out, and only NSG will remain as a trade partner with Neste Oyj. This in turn affects the RP SAP implementation making it easier, as one company can be left out of the picture, interviewee I describes.

As a summary, interviewee I describes the most crucial part of the supply and sales chain planning in SAP implementation following:

"The biggest issue is, what kind the future steering will be in SAP as a whole, as the two business areas are quite different steering and planning wise. The fear is not, that something can't be done in the future, but that it needs to be done multiple times in different modules and applications for the two different business areas. For example is the future that first the shipment planning needs to be done in Spiral, after which it needs to be moved to SAP, after which the shipment plan

needs to be done in Jawa after which the data needs to be updated in LT MOM [the future version of Jawa] and so on. So, the linkages of the different systems are really crucial, and this solution can't be taken either from OP implementation phase or straight from SAP."

Logistics

Interviewee O highlighted that logistics inside the company doesn't take into consideration the legal company in most of the cases, and only focuses on the stocks. As a result, from logistics point of view the cargo is always handled as an order, and the only thing that needs to be known is whether the cargo is legally owned by Neste Corporation or by an outside company. In other words, at SAP logistics is called a common function, and as a result it is the same if the transported cargo is under renewable products or oil products business areas ownership. Interviewee P described the process at logistics following:

"Actually in the future, after the merger, the process will be simplified, when supply and sales will be removed, and only internal stock transfers remain [between NRF and Neste Oyj]. In SAP the ERP structure is built in a way, that if there are two companies, there needs to be two plants. So now when the two companies are merged, they can also be situated at the same plant, and as a result the system reflects the actual physical transaction and reality better."

Informant O also highlighted that the actual transportation in the system will be made easier, as after the merger there doesn't need to be own transportation system per company. Generally SAP doesn't support that in the same system there would be two legal companies cargo, but in Neste case that has been made possible already in the previous implementation phases, as there are several subsidiary companies that will remain even after NRF merger.

According to the interviewees even the different inventory methods don't cause in SAP errors, as from logistics viewpoint there can be several different inventory methods at the same time in place. In practice, logistics is not interested even in the value of the inventory, only that the product can be delivered to the correct place,

and that there is no wastage during the voyage. As a summary, according to interviewee O, the merger does not affect the logistics design work significantly and if it affects, only positively as there is no need to build for example separate transportation systems.

However, interviewee F added, that the terminal system may cause some troubles in the future, as now the different business areas are separated based on the legal company in the shore tanks, but in the future the products from both oil and renewable business areas could be in the same terminals, and even in the same shore tanks, for example in the case the product is a blend and contains partly renewable and partly oil characteristics. In this case, the different parts of the product can't be separated anymore based on the legal company. On the other hand this may only require specific data from each tank, which needs to be entered to the system under the business area, and not specifically under the legal company. Again, this would require a way to separate the business areas in SAP under the same legal company, interviewee F added.

Access rights

According to interviewees M and N, currently, before the merger, the access rights are limited by the legal companies and business roles, an example could be for instance Neste Renewable Fuels Oy finance specialist. So, in principle, there is one business role for SAP ECC, which can also include various business objects, such as reporting and Allegro's (the trader's tool) various functions. Thus, when the access rights are sought to a person, there needs to be a role, to which has been linked everything that that business role needs. This, on the other hand, requires harmonized roles, which can fit more than one employee in the company. According to interviewee M, indeed one of the biggest challenges is how the access rights roles are identified in the future, as at the moment the roles are defined primary based on the legal company. In the future the limitations to access information is another big challenge, as Neste Oyj will be as the result of the merger a huge entity, to which nobody could be given full access rights, not even to one business area.

Interviewees M and N also highlighted that the access rights should be an important part already of the planning, testing and implementation phase of the RP project. According to the interviewees the most important questions that still remain unanswered are: How do we get business areas to define roles in advance for access rights? How can we make sure that licenses and authorizations are an important part of the whole implementation process and organization and that they are taken into account, already for safety reasons? Interviewee N also noted, that the access rights are even without the SAP implementation project an important part of the whole corporations risk matrix, and as such, they are also at regular basis audited internally as well as externally, so they have to work.

6 RESEARCH ANALYSIS AND DISCUSSION

In this thesis's empirical part the emphasis was on the more technical part, for example in SAP architecture and configuration, and in the issues which were raised from case company Neste's business units: master data governance, reporting and analytics, bio management, supply chain management, inventory, finance, logistics, operations (supply and sales) and access rights management. As a result, the larger aspects, like integration strategy and planning and integration team that were discussed in theory part of this work, were left with lesser attention, even though they are of utmost importance and critical for the whole post-merger integration to be successful. In the case company those things were however already implemented successfully and working, so the attention could be focused on minor and more technical factors as the surrounding and supporting structure was already in place. In other words, the theory part of this work represents the larger, more general picture of the aspects and themes which are needed to be taken into consideration when planning post-merger systems integration, and the empirical part represents a special oil industry case example, where the found critical aspects appear, when the overall integration project, integration team and process is already successfully on place. Below, **Table 7** sets the research questions to the chapters where the questions are discussed and answers are represented.

Table 7 Chapters and research questions answered

Chapter	Research questions
6.1 Key factors affecting ERP integration success	RQ1. What are the factors that lead to ERP integration success following a merger? RQ1.2 What are the most crucial points in ERP integration after merger?
6.2 Interesting insights to post-merger ERP integration	RQ1.1 What effects and changes merger has to ongoing ERP implementation?

6.1 Key factors affecting ERP integration success

After analyzing the interviews there were several aspects found that several interviewees mentioned in their interviews. These themes can be grouped as:

1. *Overall merger activities*
2. *System implementation details*
3. *IS integration process*

The biggest realization was, unlike before thought, that the legal company boundaries and limits are not the defining and challenging aspect in post-merger integration project, but mainly the starting point based on which the organizational structure in SAP is formed. Instead the biggest challenge which reflects to all of the beforehand decided focus points and main themes presented above is: *How two different business areas, with different needs and requirements can be controlled and separated under one legal company ERP system wise after the post-merger system implementation?* In the interviews this question could be reflected to all the different focus areas from reporting and finance to access rights. As a result, the biggest issue was not how to combine these business areas, but how to keep those separate under one company code structure in SAP.

The biggest challenge in keeping the two business areas separate was tackled by investigating the differences between the two business areas, and by building the new ERP system by those separate business area specific requirements. One example of the different requirements could be found from finance, which in turn reflects to reporting requirements, and another from supply chain management, which is closely intertwined with the bio product management, where also the biggest differences could be found. However, as mentioned several times in theory, and by the interviewees, when implementing the new ERP system, it is important to find the right level of compromise between SAP packaged functional and the Neste specific modifications, which SAP allows the end user companies to do. As a result Neste cannot do too many special modifications to satisfy the business areas

requirements, as those may cause some problems, for example, in future updates that SAP offers and cause extra testing, maintenance and documentation. These aspects were labeled under the second theme, system implementation details in this work.

In practice the actual planning of the implementation starts from the processes, and from the identification of the common structures and procedures in the merging companies, and in Neste's case from the common structures and procedures between the two business areas. These steps were identified both in theory as well as from the interviewees, for example interviewee A mentioned these steps as important when talking about the implementation process. In other words the goal is to focus on the big picture, instead of to the smaller details. These aspects were in turn labeled under the third theme, IS integration process.

By implementing too many business-required Neste specifications to SAP, Neste could also lose the sought best practice, which was one of the reasons why SAP was selected as the new ERP-system. This motive could also be recognized from literature, where a big ERP provider was thought to bring the best industry practice to the company, as well lower the update and maintenance work and costs in the ERP user company, as the ERP provider usually brings updates to their system. Especially in oil related literature SAP was recognized as a widely used ERP system, so this also supports the conclusion that oil companies try to find the best industry practice through SAP.

It could also be noticed from the interviews that quite many unclear aspects were not directly related to the ERP implementation, but also to the changing organizational structure, business areas, changing business models and to the changing work tasks. This aspect supports the notice from the theory part of this thesis, where it was described that even if the work is restricted to ERP implementation aspects, business implementation also needs to be addressed to some content, as the two aspects are tightly intertwined in reality, as ERP system is

made to support the business functions. The aspects that support this conclusion were titled under theme overall merger activities in this master's thesis.

Overall, based on the interview data, six critical points can be to be highlighted, which needs to be taken into account when planning and designing the ERP implementation. These points have been selected based on the fact that they were most commonly encountered in the interviews and caused as well the greatest concern among the interviewees. Below these points are presented, but not in the order of importance, as it is hard to analyze the importance order. As a result it can be said, that these aspects are equally important to take into consideration.

1. Merger timing: When a merger is done in the middle of an ERP implementation project, it is important to focus on the timing. Good timing provides, that the resources are used wisely, and again bad timing could cause even significant harm to both companies.

2. Migration management: From the beginning it needs to be clear what the sought outcome in the project is. For instance, how the new entity is wanted to be reported and does Neste need to see the two business areas still separately after the merger, even though they will be legally under the same company in the future? All of these supporting structures needs to be planned beforehand, as it cannot be decided after the merger that for example there is a need to see the reporting separately. In practice there can be a few exceptions to the planned, but managing the exceptions can be challenging.

3. The importance of planning in advance: Again, what is needed to keep separate, and on what level these needs to be separated? When the planning is made before the data migration, all of the changes can be tested and followed up. It is also important to note that in all oil products with some bio component, immediately all the same requirements apply as in full bio products.

4. Comparable EBIT calculations: How are the comparable EBIT calculations handled for the two business areas, and when they are under the same legal company? An important question which needs to be answered is which business area gets the profit in blend products.

5. Separation of products in the same tank: If the production costs are needed plant based, how is it handled in SAP? Also what if the products are needed to be separated in the tanks based on the refinery plant under the same legal company, how is it handled in SAP?

6. Building reports: Can the reports be taken straight from SAP in the future, or what is the system that enables the usage of the reports? In the previous implementation phases it has been noticed, that the different sections can be so complex, that the reporting is needed to be built by hand for example in Excel or a similar tool, as full automatization is impossible. An example of a complex section is for supply chain management, where there are a lot of changes which affect reporting.

Overall, in this master's thesis case company Neste Oyj, the critical success factors in post-merger ERP integration project were well in line with the critical success factors described in theory.

6.2 Interesting insights to post-merger ERP integration

From this master's thesis it was well seen, that as mergers are complicated by nature and the uniqueness of each case provides additional insights to the theoretical framework, and it is hard to use one framework to study the success factors in reality. However, from theory there can be found several effecting factors, which needs to be taken into consideration when planning the merger and the post-merger ERP integration.

First, the actual merger type effects the post-merger ERP implementation, as it sets the starting points to the whole project and process. For example, if the actual merger is just organizational change inside one company, in the form of reconfiguration and restructuring or adding outsider companies under one bigger parent company, it has a big effect. In the case of a merger, often one of the companies dissolves completely, and only the merging company remains, which affects the post-merger integration in a different way than if the two companies would continue for example as subsidiary companies. Often, if the merger happens

inside one company corporation, for example in the form of subsidiary merger, already the merger process is simpler and more flexible which gives also more room planning and process wise to the actual post-merger systems integration, even to an extent, that the system integration and merger planning can go hand-in-hand and their timing can be targeted.

Another aspect that affects the post-merger IS integration is the perspective, which is the focus point. In IS integration, the perspective can be focused on structural aspects, which leaves the individual out, or to individual aspects, which leaves the structure to lesser attention or the perspective can be a mixture of the two. Also, whether the focus is on business systems integration or in information systems integration, effects the outcome of the whole project. In most cases, the focus is a combination of both, with emphasis on either one, as the information systems integration should be done with business requirements on mind. The business and information systems integration strategies play a big role in this aspect.

Thirdly, the context in which the post-merger integration happens affects the process to a big extent. These contexts could be divided into external business or industry context, organizational context, information systems context and enterprise system project context. In this thesis's case company, the context made the integration project easier, as the industry branch was a mature one, and both merging companies are already owned beforehand by the same owner.

7 CONCLUSIONS

Merger and post-merger integration are wide topics, which can be analyzed and understood from different viewpoints, for instance from legal, business or information systems perspective. In addition to that, also the context in which the merger and integration happens, along with the industry that is studied, can change the aspects that should be focused on when trying to find the key factors which lead to a successful enterprise resource system implementation following a merger. In this study, the observed industry was gas and oil industry, which gives a good viewpoint to observe post-merger ERP implementation between theory and empirical in the form of a case company because the industry is a mature one with similar organizational contexts and IT infrastructures between several companies, which lessens the confounding effects that different industry and IT environment can cause. Hough et al. (2007) studied that in oil industry the adoption rate of SAP for ERP system was 90%, including this study's case company which chose to implement SAP for ERP system as well.

7.1 Theoretical & managerial implications

The main research questions in this master's thesis were to study the key factors which affect and lead to a successful ERP integration following a merger, as well as to find out what effects and changes merger has to an ongoing ERP implementation. Based on the theoretical background and case study that was conducted, the main factors that should be focused on are integration strategy and planning, technical factors, integration team and the project process. In the case company it was noticed, that since the merger happens at the same time as the ERP implementation project, the integration team could be left for lesser importance, but only for the reason that the team is already set up and working efficiently. As a result, it could be analyzed, that the theory reflects well the reality in the case company.

It could also be analyzed that the effects and changes affecting ERP implementation could be found from the type of merger, the context in which the merger and ERP

implementation take place and on the motives and perspectives which influence the whole post-merger ERP integration project and process.

7.2 Limitations and areas for future research

As IS implementation projects generally take several years, the problems and phenomena during each stage may differ a lot. Although the aim of this study was not to offer a comprehensive view in the perspective of a comprehensive IS implementation project, it should be noted that the cross-sectional nature of this study poses certain limitations. The interviewees may experience very different problems in the early stages of the implementation and some perceived to be great problems might be revealed to not be problems at all in the later stages of the implementation. Also, vice versa new challenges may emerge in the later stages of an IS implementation that cannot be foreseen and thus they drop out of the scope of this research. By researching post-merger implementation in each stage separately valuable data on the perceived challenges could be obtained and then compared and merged. These results would be valuable for the preparation to these big IS implementation projects.

This study was conducted to a single case company and thus the limitation to this company exists. This limitation could be weaker than first perceived, as oil industry is a very mature industry with very well defined and uniform, to some extent, organizational structures and processes. Also, most of the large companies in the industry reportedly already have implemented SAP produced ERP, so from the IS point of view no great differences should exist. But, to generalize the findings of this study, further research on other companies in the same industry in the same situation should be conducted. This could be done by following the research process in this study and then comparing the results to point out the similarities and differences found.

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APPENDIX

Key organizational elements in SAP:

- **The SD module in SAP** is organized according to **sales** organization, distribution channel and division. A combination of these three organizational units forms the **sales area**.
- **Sales** organization: An organizational unit within logistics that sells and distributes products and negotiates terms of **sale**.
- **Distribution channel:** Channel through which saleable materials or services reach customers. You can assign a distribution channel to one or more sales organizations.
 - Distribution channels:
 - **10 – Sales:** All product sales will be routed through this DC
 - **20 – Transfers:** All Intracompany transfers will be routed through this DC. This would be used for all MoTs.
 - **30 – Services:** All services that case company sells (except Logistics) will be routed through this DC
 - **40 – Logistics:** All logistics services and also Throughput contracts will be routed through this DC. This DC was added on the request of case company to keep the reporting separately for Logistics related services.

Sales Area Definition:

- **Division:** Product groups can be defined for a wide-ranging spectrum of products. For every division you can make customer-specific agreements on, for example, partial deliveries, pricing and terms of payment. Within a division you can carry out statistical analyses or set up separate marketing.
- Distribution channels:
 - **OP:** Oil products
 - **SP:** Speciality products (including base oils)
 - **RP:** Renewable products

Purchasing Organizations:

- **Purchasing Organization:** An organizational unit subdividing an enterprise according to the requirements of **Purchasing**. It procures

materials and services, negotiates conditions of **purchase** with vendors, and is responsible for such transactions.

Plant and Storage Locations:

- **A Plant is an organizational unit** within a company where activities take place. A plant will produce goods and makes goods available for the company. A plant in the oil business can be a refinery or a terminal or another location where stock is stored.
- Additionally we are also using so called "In-Transit plants" to represent floating stock which is on a vessel or RTC but is not yet discharged.
- Each Plant will have 3 storage locations:
 - 0001: Inventory
 - 9999: In-Transit: will be used in case of truck deliveries
- **Purchasing group:** A purchasing group corresponds to a buyer or group of buyers who perform procurement activities: