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# INFORMATION TECHNOLOGY INTEGRATION IN M&A: SYNERGY CREATION CHALLENGES

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# ABSTRACT

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Mergers and acquisitions are conducted as a way of achieving inorganic growth or other benefits, such as creating synergies between two separate business units. M&As require an immense resourcing effort from both merging partners and often requires a great deal of internal competencies. As a result, most of M&As destroy value rather than create it. One key component of M&As is the integration of processes. The process of integrating IT across different companies is a complex process in M&As. IT integration processes vary between different scholars in naming and in content. When conducting M&As in search of synergistic benefits some challenges are faced in the IT integration process. The challenges which integrators are facing when integrating the collective IT is quite different regarding the circumstances in which it is conducted. This study was conducted to gain more in-depth understanding into the different challenges integrators are facing and categorize the findings using current literature. The empirical data of the study was formulated through qualitative, semi-structured interviews of key informants in IT integrations. This data was thematically analyzed, and the analyzed data was mapped to the framework to show contingencies in previous studies and highlight which challenge themes are relevant to which strategies and how the challenges could affect the process of realizing synergistic benefits. The IT integration challenges directly affect the realization of synergies, and the themes can be identified using the framework. Further, additional research directions in are recommended for scholars in the field of IT M&A and IT synergies.

Keywords: mergers and acquisitions, integration, IT integration, synergies, integration challenges, synergy creation challenges

# TIIVISTELMÄ

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Yritysjärjestelyjä ja yritysostoja, erityisesti fuusioita, toteutetaan keinona saavuttaa epäorgaanista kasvua tai muita etuja, kuten synergioiden luominen kahden liiketoimintayksikön välille. Fuusiot vaativat valtavan resurssiponnistuksen molemmilta fuusioituvilta kumppaneilta ja edellyttävät suurta määrää sisäisiä kyvykkyyksiä kaupan läpivientiin. Tuloksena suurin osa yritysostoista ja fuusioista tuhoaa arvoa arvonluonnin sijasta. Yksi keskeinen osa yritysostoja ja fuusioita on toimintojen integrointi. IT:n integrointiprosessi on erityisen monimutkainen ja olennainen prosessi, joka vaikuttaa yrityskaupan tuottavuuteen merkittävästi. IT-integraatioprosessit vaihtelevat eri tutkijoiden välillä sekä nimeämisen että sisällön suhteen. Kun etsitään synergisiä etuja yritysostoista ja fuusioista, IT-integraatioprosessissa kohdataan erinäisiä haasteita synergioiden luomisen suhteen. Integroijien kohtaamat IT haasteet, ovat melko erilaiset sen mukaan, missä olosuhteissa integrointi tapahtuu. Tämä tutkimus suoritettiin syvemmän ymmärryksen saamiseksi integroijien kohtaamista erilaisista haasteista ja luokittelemaan löydökset nykyisen kirjallisuuden avulla. Tutkimuksessa hyödynnetty empiirinen materiaali kerättiin laadullisilla, puolistrukturoiduilla haastatteluilla avainhenkilöiden kanssa IT-integraatioissa. Haastatteluiden tieto litteroitiin ja analysoitiin temaattisesti. Analysoinnin jälkeen dataa katsasteltiin IT integraatioon liittyvän viitekehyksen kautta, jotta saatiin selville miten johdonmukaista, empiirisesti koottu data on suhteessa aikaisempaan tutkimukseen, mitkä integraatiohaasteisiin liittyvät teemat liittyvät mihinkin integraatiostrategioihin ja miten haasteet voivat vaikuttaa synergisten hyötyjen toteutumiseen. IT integraatiossa havaitut haasteet vaikuttavat suoraan IT synergioiden toteutumiseen ja alustavaa viitekehystä voidaan hyödyntää tunnistamaan teemoja. Lisäksi viimeisessä kappaleessa suositellaan jatkotutkimusaiheita IT integraatioiden, IT synergioiden ja yritysjärjestelyiden IT:n piiristä.

Avainsanat: yrityskaupat ja yritysjärjestelyt, integraatiot, IT integraatiot, synergiat, integroinnin haasteet, synergioiden luomisen haasteet

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# 1 INTRODUCTION

> While the drivers for M&A (mergers & acquisitions) can be varied, at the most fundamental level an M&A transaction is largely about realization of business benefits through synergy capture—whether cost savings or growth/strategy enablement (or both). (Joshi & Sharma, 2013, p.4).

As financial reporting, management information and business functions are all affected by information technology (IT), the heavy reliance on it makes it a priority in M&A deals. (Joshi & Sharma, 2013, p.4). Information systems integration (ISI) has seen a rise in research frequency in through the 21st century, when having systems became more prominent and IT systems efficiency became a tool for competitivity. Information technology, and more precisely information systems (IS), are one of the most important operational tools in any industry. McKinsey found that 50 to 60 percent of the M&A initiatives intended to capture synergies are strongly related to IT, but most IT issues are not fully addressed during due diligence or the early stages of post-merger planning (Sarrazin & West, 2011, p. 1). Due diligence is a stage of the M&A process, in which the buyer does their due diligence on the target company and assesses different aspects of the targets business functions. These can vary from different financial number-based metrics to compatible systems, for example examining ERP-systems, data structures, and IT architecture. IT due diligence is more directly interested in the information technology side, such as IT assets and evaluation of documentation as well as interviewing key personnel in IT (Joshi & Sharma, 2013). Joshi & Sharma (2013) propose that the majority of transactions fail to achieve the required level of synergies due to poor focus on the IT due diligence before the deal sign-off. Further, M&As are generally highly dependent on the social aspects and social context of the situation. Choosing the right integration or separation strategy aligned with the overall strategy and goals of the M&A and executing it is highly dependent for example on the cultural fit and how the plan is executed and what personnel are selected for what positions. E.g., a project manager with limited understanding on both organizations will be an unavoidable factor inhibiting the IS integration (Alranta & Kautz, 2012).

From combining the information above, it can be gathered that M&A success, and more importantly synergies, are affected by a multitude of different topics, circumstances, and prerequisites, such as effective and thorough IT due diligence, enabling enough resources for the integration, and selecting and enabling the execution of a selected strategy for the M&A. Blatman & Lukac (2013) present that without efficient planning and execution of a well-aimed IT integration strategy, the synergies are unlikely to occur. Blatman & Lukac (2013) also give examples of what synergies could include, these are: shared overhead, economics of scale, cross-fertilization, and operational integration. All aforementioned examples can be enabled and are affected by the successfulness of the IT integration. Further, strategy can be overall seen as an important part of any plan and execute -type action. Naturally, having an integration strategy is detrimental to the success of the integration itself, and thus to enabling the M&A activity to capture synergies efficiently. This study is aimed to give a more in-depth look to the challenges the buyer side faces in the M&A process.

## 1.1 Motivation

The motivation for the study stems from a practical need to understand the challenges in IT integrations when pursuing to create synergies through M&A. This need is reinforced in the corporate world, but researchers are more and more interested in the IS integration. The research on synergies and in IT M&A is deeply connected to practicalities of the corporate world. The need to understand synergy creation throughout the M&A process is essential to achieving the synergies through M&A. When involving IT in the integration phase, several challenges are faced by the actors. Mergers and acquisitions propose a great opportunity for inorganic growth, value creation, and organizational performance for companies (Gomes et al., 2013; Hennigson & Kettinger, 2016; Lohrke, Frownfelter-Lohrke & Ketchen, 2015).

Regarding the previous points, the importance of post-merger integration is obviously significant, further considering the fact that due diligence and all pre-merger analysis is leading up to this point. Thus, understanding, identifying, and ranking challenges regarding specific topics in the context of post-merger integration is extremely important. Sarrazin and West (2011) in a McKinsey study found that 50 to 60 percent of the M&A initiatives to capture synergies are strongly related to IT. Further, most IT issues are not considered in early stages of post-merger planning or due diligence. In addition, 60 to 70 percent of M&As in private sector destroy financial value, measured by short-term and long-term performance, and market value (Hennigson, Yetton & Wynne, 2018). A survey by Accenture (2006) propose that ISI is the second most important reason when considering M&A failures. The Accenture report further states that barely half (51 percent) said that their deals achieved expected revenue synergies. A more recent study by Joshi, Sanchez and Mudde (2020) still proposes that 70 to 90 percent of M&As fail despite a yearly spending of 4 tril-

lion dollars in the M&A field. All these studies reinforce the fact that M&As are an extremely complex topic, where financial gains are scarce and difficult to achieve and are often directly caused by IT challenges or otherwise items that are in some way related to the IT landscapes of the companies. This study is aimed towards creating new information on the challenges of synergy creation when considering ISI, which can prove to be much needed information on the process and the challenges in synergy creation, regarding the previous statistics. The topic is narrowed to synergy creation in light of its complexity and how synergies are explained in relation to information systems. The field of synergy creation in the integration of systems is not a common topic in the literature of M&A studies and we received an unique opportunity to interview people who have been and are a part of large merger project within close proximity of the IT side of the project. The topic was then selected from a list of potential topics to narrow the research topic. There is a gap in studies regarding the ISI process and how synergies could be created and more precisely how different factors affect the synergy creation mechanisms to impact the merger. This study will hopefully open the topic of ISI synergy creation to more rigorous research and other researchers would be able to utilize the findings of this study, albeit being narrow for the low sample size, and create new understanding and possible future research themes in the field of ISI process and IS synergies in M&A.

## 1.2 Research questions and objectives

Some notable previous research in IT M&A are regarding topics of post-merger IT integration strategies (Wijnhoven et al. 2006), analyzing business-IT alignment (Baker & Niederman, 2014), and a comprehensive literature reviews such as by Hennigson, Yetton and Wynne (2018). The topic of synergies is studied in the context of overall merger synergy and distinct IT synergy topics are difficult to come by. The many issues of successful integration projects have been research in great depth and many challenges regarding integration projects have been identified. Further, the deficiencies of outcomes of post-merger IS integrations are studied by Hennigson and Kettinger (2016) and Feldman & Hernandez (2021) who identifies and classifies how different integration strategies, contexts and mechanisms affect the outcomes. This study will build upon what is already known of deficiencies and challenges and provide a case study-like approach to understanding more precisely the "why did this happen" aspect behind not-actualized synergies and the challenges integrating parties faced when trying to achieve synergies. The research pursues to answer two questions regarding challenges in creating synergies:

I. What challenges the buyer side faced or identified in actualizing IT synergy benefits in the M&A project?

II. How do these synergy challenges map to the theoretical framework created for this study? (Based on: Feldman & Hernandez, 2021; Blatman & Lukac, 2013; Alaranta & Mathiassen, 2014; Wijnhoven, 2006; Hennigson & Yetton, 2013)

The first research question is answered by interviewing three individuals who have been involved M&A deals on the buyer side. These interviews are aimed to discover the challenges they identified in the integration projects. The first question will also be partly answered through a literature review which will create the preliminary framework and required background for the study. The working hypothesis is that through combining the data collected from the interviews with the previous study and the framework created for this study it is possible to map these synergy creation challenges to different action items in the selected integration strategy. By doing this, this study could provide assistance for integrators to plan the integration even more ahead and identify some possible challenges that they could face in the system integration process when aiming to create some synergies.

## 1.3 Structure of the research

Firstly, the research is aimed to give the reader a thorough understanding of IT M&A and what synergies mean in information technology and M&A contexts. These concepts are explained briefly in the introduction of this study, in addition to the background and motives, objectives and problems, and the structure of the research.

In the second and third chapters are the main chapters of the study where are presented the key concepts relevant to IT M&A and synergies. The theoretical background is based on previous studies conducted in the area. This chapter introduces terms, concepts, and other previous studies to propose a general operating context for the case studies and analyzing of the gathered interview data. The study is mostly concerned about the role of IT in M&As, overall and IT synergies, synergy creation challenges, and IT integration and the ISI (information system integration) process. These contexts are elaborated further and a theoretical background for the study is formed.

The fourth chapter presents the research methodology by which the study was conducted. The process of literature collection, process of qualitative interviews, and the thematic analysis is presented in more detail. In this chapter the research methods, data collection and validity are introduced and presented. This research includes three key informant qualitative interviews. The personnel knowledgeable of the buyer side of these deals were interviewed to identify challenges that these deals encountered when pursuing to create synergies in IT. These challenges are then thematically analyzed and mapped to previous studies conducted in the area. In the fifth chapter, a theoretical framework upon

which the findings build is created using the literature identified in chapters two and three.

The sixth chapter concerns the qualitative study itself. In this chapter the interviews and their findings are broken down and examples are presented from the interviews to present the reader more context to the topic. First, we explore the merger of Delta, then the merger of a multinational large merger of Echo. The interviews were transcribed and coded along the guidelines of the thematical analysis. These themes are then explored in relation to the framework and main findings are presented in the chapter 6.4. The study ends with chapter seven, conclusions, and presents possible future research topics in the field of IT synergies in M&As.

# 2 MERGERS AND ACQUISITIONS, INFORMATION TECHNOLOGY, AND SYNERGY

M&As can be and are driven by various factors but at a fundamental level, M&A transaction is often about realization of benefits through synergy capture, where IT capabilities can be the most significant factor and enabler. Today's business operating environment heavily relies on different systems in financial reporting, managing day-to-day operations, and information management which introduces an added level of complexity to M&A transactions. This topic is further complicated by different variables such as preexisting, buyer-side system complexity. The importance of IT in the operating environment makes IT a priority item in today's transactions. (Joshi & Sharma, 2013) Thus, the relationship between M&As and information technology could be described as manifold and including intricacies such as previously mentioned complexity but also in addition themes of technology due diligence, information system integration and system integration strategies.

The M&A lifecycle in its most default format is straightforward. On a base-line level it includes the following three main activities. (Joshi & Sharma, 2013) These are:

1. Letter of Intent (LOI) signed. Due diligence can start and other preparations which are aimed to gain insight and information beforehand.
2. Deal signed (Day 0). Integration or separation planning is started more rigorously with wider access to the target's systems and data. Includes also aligning or separating systems and processes.
3. Deal closed (Day 1). The integration or separation plan is executed.

This study is aimed to understand what challenges integrating parties face in synergy creation in the period of executing integration activities following Day 1, or the post-merger integration. Other parts of the M&A process are considered, but the focus of the study is on the post-merger integration related IT processes and activities. This chapter presents the key concepts of information

technology related topics and items in M&A process and lifecycle, and how these affect the process and the outcome.

## 2.1 Information technology in mergers and acquisitions

Information technology is a crucial part of today's transactions, and as crucial it is, it is also a complex item in the execution of the merger to manage. As an item in M&A, Sarazin and West (2011) in a McKinsey study state that 45 to 60 percent of all M&A benefits are dependent on effective information system integration, so over half of all M&A benefits are affected by the integration capabilities. Further, the information systems literature on IT M&A integrations indicate that integrating the IT capabilities is notoriously difficult and costly. (Tanriverdi & Ulysal, 2015) A study by Lohrke, Frownfelter-Lohrke and Ketchen (2016) was aimed to uncover the role of information technology systems in the performance of mergers and acquisitions. Lohrke et. al. (2016) conducted a literature review and identified four main challenges and solutions that merging entities face in the M&A process: IT needs to be viewed as a key consideration from the start of the M&A by involving the merging companies CIOs in the process early on; matching integration strategies to internal capabilities is crucial when integrating disparate systems following the merger; it's important to quickly align disparate IT and information security policies across the merged entity to reduce security vulnerabilities during the M&A process and after the execution; use IT to enhance sustainable competitive advantages of a merged firm. (Lohrke et al., 2016, p. 3)

The theory of resource-based view (RBV) in M&A assumes that superior acquirer IT capabilities to be scale-free and be redeployed to the acquired companies with little to no cost. (Feldman & Hernandez, 2021. p. 1) Simply rip the current IT landscape and implement the more superior environment to the acquired entity. These assumptions are often invalid as studies have shown the M&As be highly complex task with a low success rate for creating financial value (Hennigsson, Yetton & Wynne, 2018, p. 255). Further, the RBV paradigm have led the M&A studies to inordinately focus on two kinds of synergies: "market power" and "operational" (Feldman & Hernandez, 2021). The other paradigm that has ravaged the M&A study landscape is the IO economics, which includes a similar premise to that of RBV. The RBV paradigm assume that the firm must own and control valuable assets and that it must interact competitively with external parties to appropriate value (Feldman & Hernandez, 2021. s. 1). As stated, creating synergies is the most common goal of conducting M&As, and having focus only on market power or operational synergies can hinder the efforts. Feldman & Hernandez (2021) propose to add three more types of synergies which will be introduced later in the study. These will also be an important part of the framework in Chapter 5.

The premise of the integration in M&A can be described as follows: complete the IT integration at the lowest possible cost, in shortest amount of time

without disrupting business functions and achieve all the set goals. (Tanriverdi & Ulysal, 2015) Naturally, capital markets are an essential part of M&As and the capital markets expectancy of the M&A deal is reflected for example to the stock price. This effect is often negative, given the acquirer has superior capabilities which often means that the acquirer will impose its own IT to the acquired company. This will in turn create additional costs and disrupt the targets' operations. When conducting research in this area, Tanriverdi and Ulysal (2015) discovered that capital markets do consider the asymmetries in IT capabilities between the acquirer and acquired entities. These asymmetries are used to predict how successful the merging companies will be in combining their technology and, more importantly, synergy-creation potential.

The lack of focus in involving IT early in the M&A can led to different issues, such as unexpected integration costs, long delays in capturing benefits, and using temporary solutions for IT issues which create additional costs and prolong other benefits from being gained. (Joshi & Sharma, 2013) Due diligence is a mandatory, and quintessential, part of any M&A process. During the due diligence process, decisions or actions that will be needed before there is any significant progress on the merger or separation can be identified (Joshi & Sharma, 2013. s. 6). Joshi & Sharma (2013) further state based on their own experience, that majority of the transactions aimed to create synergic value, ultimately fail due to inadequate focus on IT due diligence The early activities in M&A regarding IT are in the due diligence process which covers three dimensions.

Table 1: Three dimensions of IT due diligence (Joshi & Sharma, 2013, p. 7)

| *People, Process, and Spending* | *Applications* | *Infrastructure* |
|---|---|---|
| **IT organization** | Enterprise (ERP, financial reporting, consolidation, human resources, etc.) | Hardware (mainframes, servers, PCs, peripherals) |
| **IT strategic planning and projects** | Specialized (revenue-generating portals, supply chain, manufacturing execution systems, distribution and logistics, safety, risk, and compliance, etc.) | Operating systems and databases |
| **IT operating and capital expenditure** | - | Network |
| **User support (help desk, desk support)** | - | Communication and interfaces to third-party |

| | | |
|---|---|---|
| | | providers (distributors, etc.) |
| **Security and disaster recovery** | - | - |

The dimensions mentioned in the book "IT M&A Best Practices" can be used to understand how and what in IT both parties of the deal need to be considering when starting the process of information system integration, more specifically the integration/separation planning. Integration/separation planning of IT items in M&A is an extremely complex task that must be aligned with other items in the M&A process, such as the overall business integration. Navigating the complex IT environment and delivering along the deal objectives can be perceived as overwhelming by both IT executes and business leaders (Asper & Protsman, 2013, p. 35). Asper and Protsman propose that IT has three key objectives in the M&A process as a key enabler to business value creation: enable business synergies and value creation, integrate IT effectively and drive IT synergies, and stabilize the IT function in the changing environment. IT being one of the most expensive and critical enablers of value creation in a deal, it is important that the IT strategy in the M&A process is planned aligned with the business. Further, Blatman and Lukac (2013, p. 26) present that the four pillars of M&A: strategy, due diligence, post-merger integration planning, and execution.

Brunetto (2006) proposes that information system management staff are not included in the pre-merger planning and assessment of the target company, even though information systems are one of the most important aspects of a successful M&A. Hennigsson and Yetton (2013) states that business and IT alignment in post-acquisition is critical in achieving the benefits expected from the acquisition, be that the synergies of systems or some else benefit. Further, Hennigsson and Yetton (2013) states that an acquisition that instead reduces the alignment post-acquisition reduces the performance and hinders the benefits from realizing.

## 2.2 Synergy creation driving M&A projects.

Overall, synergies can be defined quite simply as: the sum of two parts is greater than the parts alone, in essence: Value [X + Y] > Value [X] + Value [Y]. Potential synergies often firstly realize in the form of an acquisition premium, which the buyer pays regarding the potential synergies that can be created in the merger of the two firms (Hitt et. al., 2009). Ficery, Herd and Pursche (2007, p. 35) provide a similar description of synergies "synergies are the present value of the net additional cash flow that is generated by a combination of two companies that could not have been generated by either company on its own". Firstly,

valuating the premium for the synergies is difficult but even more difficult is to realize the synergies because of the challenges in the integration phase. Integrations are considered more in-depth later in the study. Premium is further affected mostly by human interaction as it enables more power and compensation for executives and executives are often also betrayed by their own hubris to thinking that integration and synergy capture is relatively easy and possible in a reasonable timeline. (Hitt et. al., 2009) These and multiple other reasons and biases often mean that the buyer ends up paying a relatively large premium for a chance of higher profits. This could have some explanation for the low success rate of M&As.

Higher profits or lower costs are only a manifestation of the synergy creation and do not explain the synergies more in-depth. (Feldman & Hernandez, 2021, p. 3) Other common metrics that are used to measure the success in M&A are abnormal stock returns and accounting profits, both of which are also manifestations of a successful synergy creation and not the underlying source. (Feldman & Hernandez, 2021, p. 3) Previous literature has been aimed to explain whether synergies exist and how they exist but not with what are the sources of synergy? Feldman and Hernandez (2021) in their research developed a typology of five distinct sources of synergies. The typology uncovers five different sources of synergies: relational, network, non-market, internal, and market power. A concept of synergy lifecycles is also introduced to explore how the timing of the initial realization and duration is affected across the five synergies.

Hitt et. al. (2005) gives a simpler, more economically centered view of synergy as they view it from the basepoint of Value [X, Y] > Value [X] + Value [Y]. They further base this understanding of concepts of complementary and similarity of resources. Targets similar resources to that of the acquirer impose the same market threats on both, whereas complementary resources *complement* each party and is a basis for synergy creation. It is also proposed that synergies typically yield gains through two methods: 1) improved operating efficiency based on economics of scale, or 2) sharing of one or more skills. Juxtaposing this with the typology of Feldman and Hernandez (2021), both gains creating synergies fit in to the basic categories of synergies: internal and market power, which Feldman and Hernandez describe as the basic manifestations of synergies. Further, when discussing of organizational fit, Hitt et. al. (2005) state that organizational fit is a base for creating synergies, in essence meaning that similarity of resources is indeed important whereas thinking of only resources complementary is in fact better than the similarity. Based on Hitt et. al. (2005) it can be concluded that synergies need complementary resources and similar resources, in the form of intellectual capital. Further, resources were not described to be specific, rather just *resources,* which does pose a question of how intellectual resources (organizational fit) similarities are different from other capabilities and for example functional or production-related resources? Thus, the definitions of synergies and the sources for synergies seem to be somewhat unclear between studies.

With these explanations, synergies can be understood to be the cornerstone of reasoning of conducting M&A. To further the understanding of synergies, the typology developed by Feldman and Hernandez (2021) (typology hereafter) is to be inspected more in-depth. From this typology the challenges identified through the research interviews can be categorized thematically to gain an understanding of which challenges affect which synergy creating item. In addition, the typology aims to also explain how synergies interact with other synergies, potentially facilitating the creation of additional co-synergies, or dis-synergies. This is further valuable information for the classification and data analysis process as it can explain the relationships between different synergy creation challenges and what elements of synergy creation could also be further affected. Synergies, especially in information systems context will be touched upon in latter chapters in more detail.

Table 2: Typology of Acquisition Synergies (Feldman & Hernandez, 2021. s. 39)

| ***Type*** | ***Definition*** | ***Source of value*** | ***Theoretical lens*** |
|---|---|---|---|
| *Internal* | Combination of acquirer and target's resources or capabilities that are directly owned and controlled, and jointly enhance revenues or lower costs. | Efficiency | RBV and capabilities |
| *Market power* | Combination of assets or other resources that gives the combined entity a competitive advantage over others, such as increased buying or pricing power, or eliminating competition. | Market power | IO economics |
| *Relational* | Combining companies can improve the assets they share with a third party. The third party has a contractual relationship with the new merged company, which could be either a supplier or a buyer, or an alliance partner. | Dyadic Relationships | Relational view, contracting |
| *Network* | Combining companies combined network of relationships can improve the new company's position. This includes direct and indirect connections between people in both companies. | Structural position | Networks |
| *Non-market* | Combining acquirer and target relationships with non-market stakeholders (e.g., governments, NGOs, communities) to increase legitimacy. | Legitimacy | Stakeholder theory, non-market strategy, institutional theory, social movements. |

From the typology Feldman and Hernandez (2021) developed, in addition to the basic synergy types of internal and market power, the added three create a more in-depth field for this study to analyze the challenges from the interviews. The post-merger integration is an important aspect of synergy realization, and it

can greatly vary depending on the type of the synergy. For example, relational synergies require an increased amount of integration as they usually involve building trust and joint routines in addition to the basic integration activities. Thus, the realization timing of the synergy varies greatly between the different types. (Feldman & Hernandez, 2021. p. 15) Ficery, Herd and Pursche (2007) proposed that the synergies are often misunderstood as plain cash-flow. Whereas synergies are not a guarantee in any deal and putting a price on "culture improvement" is difficult, when buying and merging another entity, you are, in essence, purchasing an *opportunity* for higher cash-flow. Regarding information systems, the synergies created by a merger and integration can be manifold. All five synergy types regarded in the typology are considered in this in study as possible synergies from the information system integration process. Important to note is that synergies in the typology are not solely in the context of information systems or IT, they are rather more general, business level synergies but including the IT aspect is possible, as the latter chapters will present.

Blatman and Lukac (2013) present the following table which highlights different possible synergies or benefits resulting from the M&A process, where the highlight is on reducing costs, increasing the market share, or either entering or creating new markets.

Table 3: IT integration benefits (Blatman & Lukac, 2013, p. 25)

| | *Reduce costs* | *Increase market share* | *Enter or create new markets* |
|---|---|---|---|
| *Shared overhead* | Eliminate duplicate information systems (IS) roles and functions<br>Reduce support costs through standardization | - | - |
| *Economies of scale* | Common technologies, platforms, and systems<br>Combined IT procurement | State-of-the-art scheduling, forecasting, or yield management<br>Global systems | Combined electronic delivery channel infrastructure |
| *Cross-fertilization* | Groupware<br>Intranets<br>Workflow | Customer database<br>Data mining | Selling derivative information<br>Channel innovation |
| *Operational integration* | Integrated operational systems (e.g., production and logistics)<br>Workflow engine | Order-entry or customer facing systems<br>Data warehouse<br>Internet presence | Truly integrated products and services |
| *Synthesis of capabilities* | Computer-aided design (CAD)<br>IT technology transfer | Uncommitted product and customer models | Cross-industry business models<br>Content, context, conduit |

When conducting M&A in pursuit of synergies, more often the results, efficiency, or general success of the M&A activities are not measured. When conduct-

ing the interview, all interviewees agreed that they do not measure the performance of the M&A integrations on a level that would gain them additional insight to the performance of the integration. This was caused by the difficulty of measuring "success" in synergy creation of high-technology companies. Valuating a synergy in real life with two systems that act as complementary to each other is extremely difficult but even more important.

## 2.3 Synergy creation challenges

This chapter presents possible topics for the synergy creation challenges. Its important to note that these challenges are not identified purely in the domain of IT, but instead overall challenges in the M&A process. The challenges in the synergy creation process in M&A vary greatly. Shaver (2006) proposes two outcome altering mechanisms for synergy-based mergers: the contagion and capacity effects. *The contagion* implies that challenges affected by the other entity will likely spill over to the other entity, thus creating a contagion of negative effects instead of realization of synergy-based value creation. (Shaver, 2006, p. 964) *The capacity effect* is an opportunity cost created by the reduction in slack resources following increased capacity utilization, which negatively affect the combined entity's ability to react to positive shocks in the business environment which could be realized. (Shaver, 2006, p. 966) These mechanisms are introduced and explained in-depth with additional case-examples. But the examples given in the research are quite specific, e.g., a lawsuit affecting the combined entity instead of only the other one. Using this type of synergy altering mechanisms to identify the challenges in this research aids to understand how the challenge could affect the M&A deal.

Ficery, Herd and Pursche (2007) propose a classification of synergy "slip-ups", or challenges, to avoid when pursuing synergistic benefits through M&A. The challenges Ficery, Herd, and Pursche (2007, p. 31) identified are defining synergies too broadly or narrowly, missing the window of opportunity, incorrect or insufficient use of incentives, not having the right people involved in the synergy capture, mismatch between culture and systems, and using the wrong process. Defining synergies too broad or wide increases the risk of the whole post-merger integration failing. When defining the scope of the synergies, the parties are also simultaneously creating valuation, timeframe, and importance ranking for the synergies. Scoping the synergies too narrow might cause the post-merger activities to allocate funding too little to important, synergy enabling functions or create "additional" costs, even though these are not in fact additional costs as they should've been calculated to the premium before the deal sign-off, or synergy driving efforts, or capabilities, go to the wrong resources, in essence creating a similar situation to that of the capacity effect. Missing the window of opportunity refers to the timeframe in which the synergies should be able to be captured or created. Dragging the process on for too long could result in taking the next thing to the table instead of finishing the

previous task, thus not realizing any synergies. Using the wrong process means that the post-merger integration, synergy capture, is not planned well or the acquiring party is not using a holistic approach to the post-merger integration where synergies are linked to overall strategy points. (Ficery, Herd & Purcshe, 2007, p. 31)

Boland et al. (2013) further proves the point of change management and its importance in the transition period of the merger. The integration affects people as some employees can become redundant, resulting in the termination of said employees. Further, this can be directly caused by the integration as it will likely involve changing some employees work patterns or job roles. While this being the case, Boland et. al. further suggest that this should not affect the IT function and that the function stays intact during the transaction period to support the business in the necessary system integrations. Continuing the topic of employee terminations, Boland et al. (2013) also state that the individuals performing the IT synergy identification will also need to identify opportunities with challenging impacts. When identifying the synergies, even if they could significantly affect or eliminate the analysts job roles, the person doing the identification must be objective and fair in the analysis. This situation can be assisted with careful planning from the IT leadership to communicate the realities of the situation. (Boland et al., 2013, p. 111)

Other classifications exist, for example Fiorentino and Garzella (2015) present challenges for synergy creation in a different way. They highlight that improper synergy management, and all its forms, can result in three different synergy pitfalls. These are mirage, gravity-hill, and amnesia. Some critique can be given for the names as they are not quite self-explanatory and require some explanation. In essence  These particular synergy pitfalls are not considered in this study, but it's important to note that there are further classifications.

Based on these classifications of challenges, planning, or lack thereof, is one the most common reason why synergy capture often fails. As previously stated, planning the integration starts early in the M&A process. Significant challenges in the integration process, where synergies are to be realized, can also be used as a reason for the divestiture of the merged entity. An example from the interviews of this study presents that larger companies are willing to divest the bought entity if the results are not what were expected and if the merger just isn't working. Naturally this process is preceded with large quantities of analysis on the *why* it isn't working as planned, but it is important to note that if the challenges overall are too difficult to overcome, companies are ready to cut their losses short and divest the company either by selling it or demerging it to its own entity. The process is costly but will serve a purpose in the end if the benefits of the merger couldn't be realized.

One topic that is very close to the challenges of specifically IS integration, and the use of new systems after the merger, that studies in this area have not concerned is the unified theory of acceptance and use of technology by Venkatesh et al. (2003). More commonly known as the UTAUT model, provides management with a useful tool to assessing the likelihood of success when in-

troducing new technologies and understanding the drivers of acceptance. The four constructs of user intentions to use an IS are performance expectancy, effort expectancy, social influence, and facilitating conditions. Through the UTAUT model, the information system integration studies in M&A could gain some insight and understanding regarding different users and what topics to consider when integrating systems and why the introduced technology was disapproved by users.

## 2.4 Information technology synergies

Technology synergies can be understood as a rather broad concept given that the IT field is quite large. Further, a distinguishment between a technology or business level synergy is quite difficult as Hennigson (2016) and Feldman and Hernandez (2021) have identified almost identical factors for synergy success, e.g., socio-technical differences (Hennigson, 2016) and internal (Feldman and Hernandez, 2021). So, an adequate distinguishment between business and IT synergies in this study is the context. In the previous chapter the Feldman and Hernandez (2021) typology of synergies was mentioned to be able to be applied to IT context as well. Thus, some applicable theoretical frameworks can be applied to include only the IT or system aspect. Joshi and Sharma (2013, p. 13) propose that planning the synergies helps laying the foundation for faster realization of benefits from the integration and that the key phases in the merger process regarding IT synergy capture are developing IT cost baseline, conducting a top-down target setting and then developing bottom-up synergy commitments, and creating the right tracking tools and processes. These in turn can create the synergies the integrating entities are looking for, in ways of reducing operating costs and risks or increasing the market share. In the synergy analysis planning, the process begins with the development of an IT cost baseline through the review of various cost sources and due diligence analysis, creating common cost views at different levels, and identifying potential synergy opportunities using benchmarking as a tool. After this, the top-down target setting is done involving identifying the high-level synergy initiatives and estimating potential savings. These are then communicated the different level teams after review by the management. This is then followed by the development of detailed bottom-up synergy commitments that aim to meet, or exceed, the established targets while validating alignment with the IT cost baseline and reviewing detailed project plans with management. Finally, tracking tools and processes are put in place to monitor and prioritize the synergy initiatives. A central repository should then be created to manage all IT projects across the functions along with the high-level process for tracking synergies. (Joshi & Sharma, 2013, p. 14) The same cost-efficiency emphasizing description of IT synergies is also further stated by Boland et.al. (2013).

Hennigson (2016) proposes that negative outcomes of post-merger integration are referred as *post-merger IS integration deficiencies*. Different integration

strategies naturally propose different deficiencies to be formed and different contextual factors affect the outcome as well. These deficiencies are important to note when planning for IT synergies to better understand the post-merger issues that might arise from failure to capture synergies. Hennigson (2016) identifies the following contextual factors to affecting the ISI outcome: time pressure (external and internal), integration extent (data intensity and process scope), merger unreadiness (social and technical unreadiness), socio-technical differences (cultural, operational, technical), and power relations (balanced, imbalanced). These contextual factors are quite similar when considering the Feldman and Hernandez (2021) typology from the previous chapter. Further, Boland et.al. (2013, p. 108) also mention different inefficiencies in the information processing patterns. The inefficiencies by Boland et al. (2013) act as a guideline to identify possible synergies. These include the following topics: functional redundancy, where the same business process is executed differently or multiple applications handle the same functions; repetitive data cycles, where data requires manipulation by different entities before use; significant manual intervention points for data adjustments; overcontrolled processing activities lacking clear justification; and reliance on out-of-date technology in processes, particularly when legacy systems hinder adaptability to evolving business needs. Boland et al. (2013) stated that setting KPIs which most effectively measure performance and relating these to the synergy tracking through the project and after.

Feldman and Hernandez (2021, p. 2) on the other hand want to focus the synergy typology to more to the side of resources that enable synergies rather than synergy manifestations. Information technology synergies, like other synergies, can be quite abstract and different regarding the circumstances in which they are identified. Boland et al. emphasized the importance of the *transaction structure* – absorbing smaller entities or merger of equals in this process. This structure determines on the IT-related synergy capture goals. (Boland et al., 2013, p. 120)

# 3 INFORMATION SYSTEMS POST-MERGER INTEGRATION

Many mergers stumble on the integration of technology and operations and thus don't live up to the expectations (McKinsey, 2011). Integrating items to complement or complete each other is naturally a difficult task, in addition to the basic integration tasks, the different synergies mentioned in the typology pose different challenges and require varying efforts to complete. Integrating systems is difficult, but it is important to understand what kind of systems this study is interested in, and how the concept of an *information system* is defined in the scope of this study, and what programs can be used as an example in the integration process. Stair and Reynolds (2020, p.4) describe information system as follows.

> Information system is a set of interrelated components that work together to support fundamental business operations, data reporting and visualization, data analysis decision making, communications, and coordination within an organization.

Building upon this example of an information system it can be understood from the context that an information system is defined as a meaningful and extensive component of business support operations, and for example used in other ways for processing data and information. An enterprise resource planning (ERP) is a model example of a relatively complex and extremely important modern business critical information system. ERPs are used, as the name suggests, in resource planning of a company. This can include human resources, e.g., staffing projects, or other, such as material or monetary, resources. Regarding the scope of this study, a broader outlook must be taken to understand the importance of information systems integration (ISI).

*The information systems function should play a critical role in the success of organizational integration for three main reasons. Since business processes are closely tied to supporting information systems, information systems need also be accounted for when building a unified firm; because management decision making is largely based on complete, accurate, and timely information, effective integration of information systems can provide the data needed for such decision making; and since the assets of IS func-*

*tions can be substantial, integration of both computing and human assets may achieve either cost savings or capability extension. (Baker & Niederman, 2014, p.113)* This statement by Baker and Niederman not only showcases the importance of information systems in an organizational setting but also the complexity of it. They highlight the importance of functional and business supporting information systems that serve the purposes of supporting important business functions and providing accurate information to management. Further, information systems are indeed a substantial part of today's organizations and making or breaking an important integration can greatly impact the financial situation on the company in a multitude of ways, two of which presented were cost savings or extension of capabilities.

This study is not entirely interested how or why a particular information system integration was successfully implemented, but more on the overall understanding of what challenges there are in the implementation, or integration, itself, and then again how can these challenges be translated to be related to synergies, in particular. Integrating systems is defined well by Giacomazzi et. al. (1997, p. 290):

> Integration of the two IS units does not necessarily imply that a single system, a software environment, and architecture is chosen, but that exchange of data and organizational processes, according to the merged organization needs, are possible and efficient.

Giacomazzi et. al. (1997), with additional assisting definitions from Weber and Pliskin (1996), define IS integration as: changes in IS strategy, IS structure, and systems supporting the combined IS and business units that allow them to function as a whole. Given that these definitions are almost three decades old, they still hold up to give us an understanding of integration and what it means to integrate two or multiple IS units, separate information systems.

Wijnhoven et.al. (2006) argue that rather than finding the perfect IT integration strategy for the merger, organizations should be thinking the strategy selection problem as an IT alignment problem. They argue this as a reason for the misalignment of IT strategy in relation to the business objectives. Gartner (2023) describes the term "system integration" as "the process of creating a complex information system that may include designing or building a customized architecture or application, integrating it with new or existing hardware, packaged and custom software, and communications. Most enterprises rely on an external contractor for program management of most or all phases of system development. This external vendor generally also assumes a high degree of the project's risks." Madni and Sievers (2013) describe system integration on a more technical level to be "involving the efficient composition of components and subsystems into a whole that offers the required functionality and achieves specific goals" (Madni & Sivers, 2013, p. 37).

In the M&A context, the integration of information technology in the scope of systems, people, and governance, if the chosen strategy is integration of some level selected, an activity conducted after the day 1. The following

chapters present the key topics of information systems integration in the scope of this study. Through understanding these topic, it is possible to build a framework of understanding the synergy creation challenges in the M&A process.

## 3.1 IT integration and information systems integration process in M&A

Different strategies for M&A are used based on different ambitions in the initial M&A planning. High-impact mergers with high level of M&A integration ambition will aim to absorb more of the target, whereas lower level of ambition and need for integration will result in using different methods such as the synchronization, or co-existence. These strategies widely share the same characteristics, and names to some extent between authors as presented in the previous chapter. A more in-depth look will provide additional insight to the integration process and integration of information systems. A common way of starting research articles into the ISI field is often done by stating how many integrations fail because of various reasons. Baker and Niederman (2014, p. 112) start their research paper by citing multiple sources: between 33% and 60% of M&A activities ultimately result in divestitures (McKiernan & Merali, 1995), the value of both acquired and acquiring company tends to fall (Pautler, 2003), and how cultural distance between the companies is causing the decline in value (Chatterjee et al., 1992). This behavior is common in papers related to information systems integration. The term "information systems integration" can include a multitude of different aspects of the whole IT landscape of merging entities. An effective way to understand the contents of the IS integration process is to look at the strategies by which the integration is conducted. This provides an understanding to what items each integration could possibly include.

## 3.2 IT integration according to Wijnhoven et al.

IT integration methods further differ along the M&A objectives and motivations. Wijhoven et al. (2006) present that the mergers may differ between three different methods based on the level of strategic interdependence and organizational autonomy the merging entities are aiming at. (Wijnhoven et al., 2006, p. 8) Wijnhoven et al. (2006, p. 10) presents different IT integration methods and what they are most suitable for. The term "IT" in this context is to be understood as consisting of the following: information systems, IT infrastructure, and IT policies. Thus, ISI is a sub-component in this equation but still an important matter. This classification of integration will be used in this study as well. Wijnhoven et al. (2006) addresses the IT with broader lenses and talks about IT integration, in which IS is included in. IT integration objectives suita-

ble for different M&A objectives and ambitions according to Wijnhoven et al. (2006) are presented in the table (table 4) below. A classification of what is the most suitable for what scenario is difficult to conclude, as all M&A processes are quite different, and the motivations and objectives of each deal differ greatly, but the overall, simplified process will give some insight to the correct approach in relation to the overall objective of the M&A.

Table 4: M&A and IT integration objectives (Wijnhoven et al. 2006, p. 10)

| *M&A integration ambition* | *M&A objectives* | *IT integration objective* |
|---|---|---|
| **High** | Absorption | Complete IT integration |
| **Moderate** | Symbiosis | Partial IT integration |
| **Low** | Preservation | IT co-existence |

Complete integration is the most ambitious IT integration objective, where the two separate systems are merged completely. For larger and decentralized entities, this may be infeasible, but it can be an option for smaller companies. Partial integration involves prioritizing the integration of essential processes and systems. This may be chosen for scenarios where synergies can be achieved from e.g., specific processes. An example of this is, in bank mergers, the asset management activities are integrated to achieve cost reduction while some core services are kept apart. The co-existence aims to keep both systems of merging entities unchanged, implementing data exchange and consolidation only when necessary. This may result in only marginal synergy realization and in the long term might prove to be cost-ineffective due to the need of maintaining redundant systems. (Wijnhoven et al, 2006, p. 9) The complete IT integration can be realized in four distinct ways: *renewal, take-over, standardization, and synchronization*. (Table 5, Figure 1) In *renewal,* all of IT is abolished and renewed by a completely new IT, e.g., new processes and activities. The renewal-process can be described as very unpractical and time consuming, especially regarding the context where time is of the essence. However, this method might be chosen if neither of the merging entities possess capabilities to support the business of the merged entity. *Take-over* in IT integration involves adopting the IT system of one merging entity as the new system for the merged entity. This method allows for faster integration but may lead to conflicts due to preferences for the original systems. Further, the selected system may lack essential functions, requiring additional adaptations. This is known as a "take-over plus". Take-overs can result in significant disinvestment and resistance from one partner but can be suitable to manage the mergers costs, especially when aiming for high synergies or when the other partner's system is clearly superior. Executing an effective take-over requires the scalability of the selected system, ultimately merging the IT of one partner into the new system. *Standardization* in IT integration involves the process of integrating similar IT functions, focusing on software

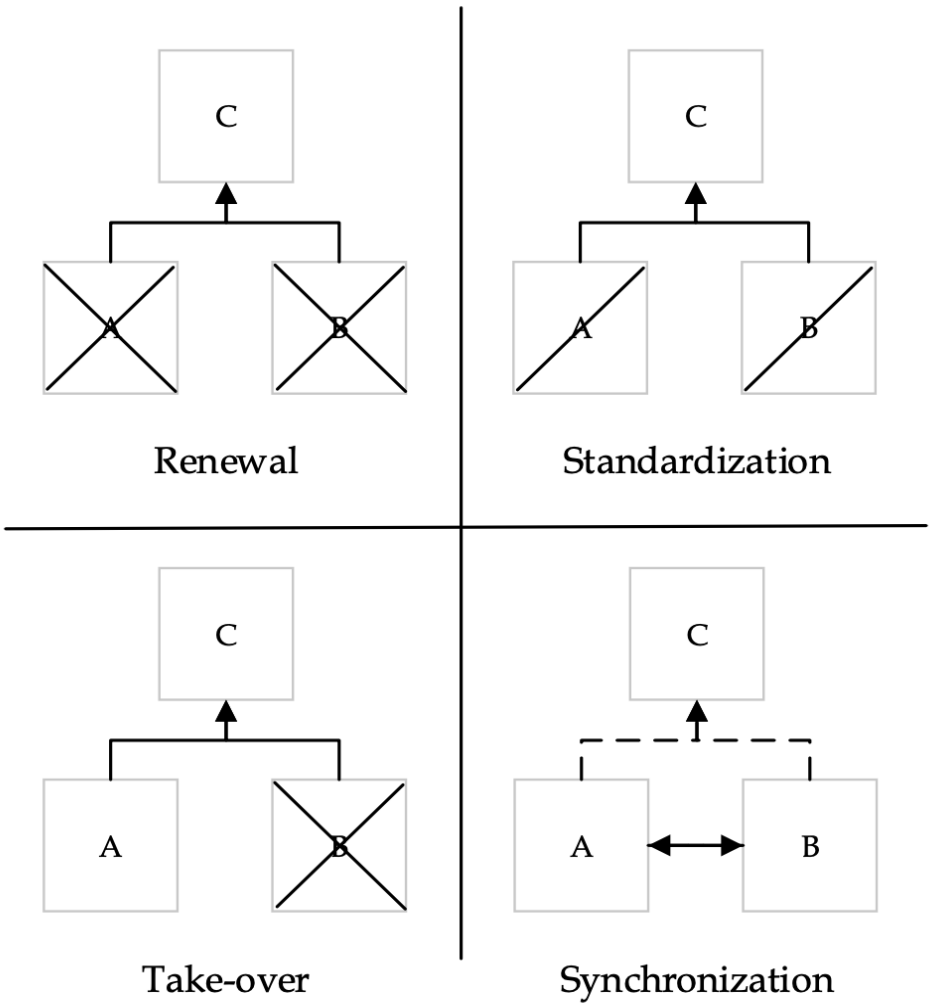
packages that support comparable business processes across the entire merged entity. This approach is also referred to as the "common systems approach", where one system is selected as the preferred choice without necessarily being objectively the best. This method is often realized by a "best-of-breed" selection procedure, which combines the best practices of the previous systems to create a new system. This new system is based on the individual best practices of the previous systems. This method abolishes some of the IT of the merging entities and replaces it with a new IT. *Synchronization* realizes only some of the synergies as both parties are left with their respective systems intact and only bridges are created between these systems to consolidate data or periodically synchronize. This method doesn't abolish any IT belonging to the merging entities, but it creates additional data flows between these entities, or in some time to a new IT. (Wijnhoven et al., 2006, p. 11)

Table 5: IT integration methods in relation to integration ambitions (Wijnhoven et al., 2006, p. 10)

| | *Complete integration* | *Partial integration* | *Co-existence* |
|---|---|---|---|
| *Renewal* | Yes | No | No |
| *Take-over* | Yes | No | No |
| *Standardization* | Yes | Yes | No |
| *Synchronization* | No | No | Yes |

The next figure presents the different modes in a more illustrative way. Adapted from Wijnhoven et al. (2006, p. 11). A and B represent the IT of M&A partner's A and B, respectively. C is the newly created or combined IT.

Figure 1: IT integration methods (Wijnhoven et al., 2006, p. 11)




## 3.3 IT integration according to Hennigsson and Yetton

Similar methods of IT integration are also illustrated in other studies. Hennigsson and Yetton (2013) presents two different integration processes to this context: path-dependent and path-breaking acquisitions. The path-dependent acquisitions make use of the existing resources in the organization to create value by deploying resources from one partner to the other, whereas the path-breaking acquisitions use both partners capabilities and resources to develop new resources. Absorption, co-existence and best of breed processes create value in path-dependent acquisitions and the renewal process creates value in path-breaking acquisitions. An analysis by Hennigson and Yetton (2013, p. 8)

present that each of the four integration processes realizes different forms of IT based value creation. Further, there are four different value mechanism by which IT based value is created: *IT expansion, IT extension, IT enhancement,* and *IT re-invention.* The mechanic for an absorption integration process is IT expansion. In this mechanism, the acquirer deploys its IT resources to support the acquisition, particularly in new physical locations, production facilities, or sales offices resulting from absorbing the target entities operations. This is sometimes referred to as "deepening" of resources, and value creation depends on achieving economies of scale to reduce IT costs. This mechanism of value in relation to the category of Wijnhoven et al. (2006) falls to either the renewal or the take-over process, where M&A integration ambitions are high, and the objective of IT integration is complete integration. In a co-existence IT integration process, the IT extension mechanism creates value by deploying the unique IT resources of the acquirer to the target entity. This typically involves transferring dedicated systems or some other resources from the target to the acquirer to support capabilities that the acquirer's IT resources cannot handle. In IT extension the value creation relies on achieving economies of scope to increase revenues. The IT extension is present in the integrations where M&A integration ambitions are low and the M&A objective is to preserve, and where the IT integration objective is to co-exist. According to Wijnhoven et al. (2006) this value creation mechanism falls to the IT integration method category of synchronization. The IT enhancement process involves deploying integrated business and IT resources from the target to the acquirer. This can vary from different order entries and delivery systems to supply chain management systems. The value creation occurs by replacing the acquirer's less efficient systems with corresponding, superior IT systems from the target. Reflecting this on the Wijnhoven et al. (2006) findings, it can be thought that the IT enhancement method is a form of standardization or a reverse form of take-over, or commonly known as best of breed. In this, the M&A objective is symbiosis and the ambition moderate, and the objective of IT integration is to partially integrate (Wijnhoven et al., 2006). Hennigson and Yetton (2013) do not directly state to which category this mechanism of value creation falls, but it can be rationalized to be a part of the latter mentioned. The IT re-invention mechanism, new IT resources are developed and deployed to support new business strategies, especially when pre-acquisition IT resources cannot support the post-acquisition strategies. It involves combining IT resources with different business resources than before, resulting in organizational transformation to enable more effective practices. This method of value creation falls to the category of *renewal* where the M&A ambition is high, the objective is to absorb the acquired entity, and where the IT integration objective is complete IT integration (Wijnhoven et al., 2006). From these value creating mechanisms, each are the primary source of value creation in the corresponding IT integration process. However, they are not mutually exclusive, as some processes may deliver secondary benefits from other mechanisms depending on the strategic focus of the acquisition. For example, a co-existence integration process might achieve some economies of scale to reduce

costs alongside its primary focus on economies of scope to increase revenues. (Hennigson & Yetton, 2013, p.9)

Further, Hennigson and Kettinger (2016) present the integration process through the topic of IS integration, instead of IT integration. They further reinforce the fact that the strategy chosen for IS integration should be aligned with the business objectives in mind and what benefits are expected from the merger. (Hennigsson & Kettinger, 2017, p. 944). The authors present four similar strategies for IS integration as Wijnhoven: absorption, coexistence, best of breed, and renewal. These follow the same process as is depicted in Figure 1. In Absorption (Wijnhoven: take-over) the either merging party's data from the IS is migrated to the other party's system and the other IS will be then retired. Coexistence (Wijnhoven: Synchronization) strategy retains the unique IS of the organizations and systems are kept intact. Best of breed (Wijnhoven: Standardization) strategy is selected when both parties have some IS based processes that are superior to the other, thus a need for preservation of both IS is needed. In IS renewal both of the IS of the merging entities is retired and new IS is introduced. This could be caused by the current IS not being able to support the business processes of the combined organization. (Hennigsson & Kettinger, 2016, p. 945)

## 3.4 IT integration according to Blatman & Lukac

Following the same type of strategy identification, Blatman and Lukac (2013, p. 31) present the integration methods, but using a different terminology. They identify consolidation, combination, transformation, and preservation as possible post-merger integration methods. In *consolidation*, the objective is to swiftly align the acquired entity with the acquiring entity's strategy, structure, processes, and systems. This means that the implementation goal is to rapidly integrate the acquired entity to achieve uniformity and efficiency. Similar to Wijnhoven (2006) take-over. In *combination*, the objective is to create an efficient operating model by combining the most effective processes, structures, and systems of both entities. Similar to Wijnhoven (2006) standardization. Combination implementation is conducted by identifying and integrating the best practices of the merging entities to form an efficient operating model for the new entity. *Transformation* is similar to the Wijnhoven's (2006) renewal integration approach where a completely new IT is formed from some parts of the merging entities. In *Preservation,* the merging entities retain their own capabilities and culture. This is similar to the Wijnhoven's (2006) synchronization where in time some level of integration is conducted. Blatman and Lukac (2013, p. 29) also further reinforce the fact that the appropriate approach chosen is dependent on the goals set for the new entity and that the M&A business objectives dictate the process.

As presented, integration strategies regarding IT or IS are quite similar and terminology is not always semantically coherent. Some strategies are defined more complexly than others, best of breed and standardization are quite

the same processes. Further, it is important to note that some authors have identified different benefits but identifying some does not mean that other benefits are invalid altogether. In Chapter five, strategies presented by Wijnhoven (2006) are utilized in the framework of the study.

## 3.5 Success factors and challenges in information systems integration

The success of an information system integration project, or more so an acquisition or merger, is complex to assess. A company could have different strategies for IT and business, and the alignment could cause some issues or hardships during the integration process. IS strategy and overall business strategy being important factors in mergers as they guide the company towards something. Post-merger system integration is defined to be a complex, messy, and evolutionary process which is also often troubled and includes different risks for both parties (Alaranta & Mathiassen, 2014, p. 38). Having tools for managing the different risks of mergers can be detrimental for the success of the merger. (Alaranta & Mathiassen, 2014, p. 38)

Baker and Niederman (2014) present examples from previous studies that could affect the success rates of mergers, and integrations. Baker and Niederman mention Robertson and Powell (2001) having observed three success factors: avoiding organizational paralysis (unclear roles, interpersonal conflict), clashing cultures, and senior management. Robertson and Powell also found some technical issues belonging to product and data integrations in target systems. Baker and Niederman (2014, p. 114) also present other success factors, from different authors which also follow quite the same theme: technology platforms, project management structures, and IT staffing practices. Further, similar hardware and information systems propose a relatively easy merger, but business processes or procedures can possibly present difficulties in starting the integration process in the first place.

Alaranta and Mathiassen (2014) in their study explore the managing of risks in post-merger ISI process. Alaranta and Mathiassen (2014, p. 31) define the risks using the following concepts: process, content, and context. Process aspect focuses on the "how" of the ISI. The content deals with the "what" of ISI, representing the new and integrated IS configuration that emerges as a result of the merger. Context addresses the "where" of ISI, taking into account the broader organizational, cultural, and geographical landscape in which the integration is conducted. (Alaranta & Mathiassen, 2014, p. 31) Each of these categories have their own risks, or challenges, the integrators should take into account when planning for the post-merger ISI. *Process risks* include the risk of process drift and resource shortfall. Process drift can be defined as the ISI process being involuntarily departed from the plans which can include topics such as delays,

cost increases, and insufficient outcomes. The risk of process drift can be realized by mismanaging the integration process or the integration departures from the plans and goals in an undesired way. The resource shortfall is a risk that hinders the ISI process by lack of resources. These can include money, time, or experience staff members, the items contributing to the "how" of the ISI process. *Content risks* include key risks of narrow focus and managerial bias, the former being a risk of failure to grasp the context of the ISI and the latter a risk of being thematically or organizationally biased in the ISI solution. The narrow focus is a risk that realizes in ways of ignoring relevant issues that arise during the integration process, such as legal, business, or technology concerns. This risk can result from a poor due diligence process where the context of the M&A is not all clear to merging parties or the merging parties fail in estimating the project's scope and complexity. Managerial bias is the risk of planning the integration to focus too strong on one key area of the merger, example instead of having a balance between business and technology. This risk can be realized when the integration planning is conducted inadequately. Context risks include the risks of stakeholder conflict and configurational incongruence. These risks are related to the topic of whereas in what kind of situations the ISI is conducted in. The risk of stakeholder conflict is a risk where some stakeholders don't support the integration entirely. This risk can be caused and realized by a lack of support of the executives and can include user resistance, business unit or team level resistance, and failure to participate in the integration from different stakeholders. The key risk of configuration incongruence is defined as having incongruences, differences, in data, systems, infrastructure, or IT practices. This risk can realize in political differences between the merging partners as partners having "us and them" feelings towards others, as a result of having incompatible policies or processes or largely different information system solutions. (Alaranta & Mathiassen, 2014, p. 34) An important note is that the risks identified by Alaranta and Mathiassen consider only the post-merger ISI process aspect, rather than the whole process from day one, albeit the risks include topics of risks of failing to plan which in itself is a pre-merger activity.

Table 6: Risks for post-merger ISI (Alaranta & Mathiassen, 2014, p. 34)

| *Risk category* | *Key risks* |
|---|---|
| *Process risks (how)* | Process drift |
| | Resource shortfall |
| *Content risks (what)* | Narrow focus |
| | Managerial bias |
| *Context risks (where)* | Stakeholder conflict |
| | Configuration incongruence |

Mahmood, Khan & Bokhari (2019) conducted a comprehensive literature review to the challenges of implementing an ERP. Similarly, to M&A, the imple-

mentations of ERP's have a relatively high failure rate. (Mahmood, Khan & Bokhari, 2019, p. 630) Mahmood et al. identified similar topics in this area as in the challenges of M&A's. Most notable are the top five issues and challenges, in order: top management approach, change management, training and development, effective communication, and system integration. (Mahmood, Khan & Bokhari, 2019, p. 638) These issues and challenges identified are quite consistent with challenges identified in the general integration process and in their own way map to the challenges of processes, content, and context identified by Alaranta & Mathiassen (2014). Further, Alaranta and Mathiassen state that even if the key IS integration driver is synergy savings, management could ignore technical and organizational requirements for transformation. (Alaranta & Mathiassen, 2014, p. 34)

Blatman & Lukac (2013) presented success factors and causes of M&A failure according to Deloitte. As stated in chapter 3.1, their IT integration processes were different: consolidation, combination, transformation, and preservation. When we combine the information of the exhibit 2.3 (Blatman & Lukac, 2013, p. 31) with the need of integration intensity, it is possible to understand what kind of success factors and challenges Blatman and Lukac have identified in relation to the ambitions of the integration and overall ambition of the merger. The table below presents the aforementioned factors.

Table 7: Causes of failure and IT integration objectives (Blatman & Lukac, 2013, p. 31; Wijnhoven et al. 2006)

| | *Consolidation (Take-over)* | *Combination (Standardization)* | *Transformation (Renewal)* | *Preservation (Synchronization)* |
|---|---|---|---|---|
| *Causes of failure (Blatman & Lukac, 2013, p. 31)* | Squandering assets<br>Alienating key people<br>Overlooking possible synergies | Long-dawn-out assessment exercises<br>Unresolved issues<br>Inefficient or complex patchwork of systems | Organizational resistance to change<br>Unrealistic goals<br>Failing to balance long-term solutions and short-term benefits | Excessive inefficiency<br>Unnecessary duplication<br>Missed cost and operational synergies |
| *IT integration objectives (Wijnhoven et al., 2006)* | Complete IT Integration | Complete or partial IT integration | Complete IT integration | IT co-existance |

The risks Alaranta and Mathiassen (2014) identified has one challenge regarding the scope of this study. The authors didn't specifically address which integration methods (i.e., renewal) the risks most likely will affect. But, through understanding the definitions of the different process, content, and context risks it is possible to derive from the definitions to what kind of integration methods

the risks could include. Further, other success factors can be derived from the process itself. Success factors can be simply understood as some conditions which affect the merger or the integration so that it can realize the most amount of value. These success factors can be used alongside the selected integration strategy to analyze the interview data to be able to have a broader understanding of the integration processes and what challenges synergy creation face or what success factors were seen as important.

# 4 RESEARCH METHODS

As stated before, IT in M&A is usually the cause in many instances where integration goes wrong. Improper due diligence regarding systems can be observed creating challenges for the implementation and integration projects as well. Further, M&As are often conducted to gain value through synergies in business functions. To answer the need of understanding challenges included in M&A, and more specifically synergy creation challenges in ISI, a thorough interview with key personnel is required. We must investigate what challenges acquirers have experienced in recent M&As regarding ISI and IT as a whole and inquire directly from the people responsible of these integrations what they deemed to be successful and what challenges they themselves witnessed firsthand in the integration projects.

When choosing a research method, it was evident that a method should be chosen that includes the possibility of open-ended questions to be answered and that the personnel who were to be questioned are able to answer the questions in a way which enables a discussion about the topic to be formed between the interviewer and the interviewee. Moreso, the topic is complex and, in some areas, convoluted, thus a qualitative method should be chosen to gather as much information as possible from the interviews and through previous literature, use a thematic approach to label and understand the information. Quantitative methods could be considered to be used in such context of identifying challenges in some other research context but given the complexity of M&A and having little to no standardization in the topic, it would be quite difficult to form a questionnaire that can be answered uniformly by different companies' representatives. A qualitative method was chosen for this very reason: to enable flexibility in the data collection.

In this thesis, the goal is to create an understanding of different factors about synergy creation challenges, create a field-agnostic understanding of general challenges in this area based on thematic analysis and enable the information created to be used in pre-merger activities as well as academically.

## 4.1 Literature collection and review

A literature review was conducted as a necessity to gain an understanding of previous information regarding the topic, what should be taken into account in the interviews regarding ISI and to create a basis for the data analysis of the research. The existing literature informs the researchers development of method selection for data collection, forming research questions and the formulation of an analytical framework (Galletta, 2013, p. 11). The literature used was collected using publicly available sources: Google Scholar, Scopus, and IEEE, and available material from the library of University of Jyväskylä. Multiple sources were found and used from previous studies in the same research area.

The main sources for the research were publications by Stefan Hennigsson, who has conducted rigorous research in recent years in the field of information technology in M&A, as well as Maria Alaranta, and Wijhoven, Spil, Stegwee, and Fa. Hennigsson has publications in such magazines and journals as: MIS Quarterly Executive and Information Systems Journal. Other noteworthy magazines and journals included in this research were: European Journal of Information Systems (Hennigsson, 2015), The Journal of Strategic Information Systems (Baker & Niederman, 2011; Wijnhoven et al., 2006), The Academy of Management Review, Information & Management (Giacomazzi et al, 1997), and Journal of Management Information Systems (Hennigson & Kettinger, 2016).

When searching for information the terms used included: "technology M&A", "information system integration", "mergers technology synergy", "post-merger technology" and "IT integration strategy", or a variation of these terms. Certain studies were excluded from this study even though they were found using the search terms, these included most notably studies of purely in the M&A scope. Further, the literature of this study was also found using the backward and forward reference searching, using the found studies and their references and citations as new potential references. Given the topic of information technology, more recent publications were preferred over outdated, such as 20-year-old, publications to enable the research relevancy. Other contributing factor of choosing publications was the publication forum, of which scores were checked using the "Julkaisufoorumi" publication score to determine the reliability of the forum. All published literature in this study, excluding reports by Accenture and McKinsey which are two credible companies experienced in dealing with M&A topics, score at least a 1 in the ranking. Score 1 means basic level, score 2 the leading level and score 3 the highest level of forum. (Julkaisufoorumi, 2023).

The Zotero application was used to manage the sources used in the thesis to enable more efficient working methods and ease the task of creating bibliographies and other menial tasks involved in storing large quantities of publications. The notes feature in Zotero was utilized to write down connections and similar topics between publications.

## 4.2 Qualitative interviews

Qualitative methods were selected to be used to gain more information about the integration projects and more so about the challenges faced in the project. The objective is to gain experienced knowledge from the interviewees and how they experienced the projects. Galletta (2013) suggests considering the research questions when selecting individuals for data collection as well as considering who will answer the research questions the best way. The interviews in this research include key personnel from the selected M&A projects provided by a highly regarded individual in the technology M&A environment with decades of experience in the subject matter. The interview method was selected for this study for the interviewees to be able to talk freely of the integrations and projects that they were interested in and be able to share their thoughts and experiences regarding the projects.

As stated before, the semi-structured qualitative interview suits the purpose of the study as it is suited to incorporate open-ended as well as more theoretically driven questions and room for discoveries (Galletta, 2013). This approach enables the interviews to be more flexible and firstly create a broad understanding of the topic while enabling to dive deeper into more technical and specific questions about the interviewee's experiences. Regarding the interviews and the data collected from them, transcribing will be conducted to all interviews to ensure the reliability of the data when analyzing it, coding, finding patterns and themes, and interpreting these themes in chapters five and six.

The interviewed personnel were all heavily involved in the buyer side M&A process and integrations all the way from the beginning to the eventual integration, or divestiture. The interviews were based on the key informant interviews where the interviewees are knowledgeable of the community and are professionals in their respective fields. The interviewees were quite eager to shed some light to this complicated landscape of M&A's and they provided great insight to how the companies are selected, why certain strategies were selected for the integration, how integration success is measured and how it isn't. The interviews lasted approximately one hour each. Two interviews were conducted in English and one in Finnish. The built-in Teams transcriber was used to transcribe the interviews, but they were also recorded if the need arose to see the original recording. The interviewees were asked the same questions, or rather discussion openers, but because of the semi-structured interview methods, some chose to show material such as roadmaps or project plans and some didn't. During the interview we inspected some of the project documentation which provided needed context for the interviews. The questions that were asked didn't differ and all attendees were asked the same questions.

The questions, or topics, by which the semi-structured interviews were conducted were the following, in order.

- Describe a deal (merger) of your choosing at a general level and your involvement in the deal.

    - What was your position?
    - What kind of role did you have in the process? (E.g., operational, strategic, etc.?)
    - Describe the parties involved in the deal.
    - What were the underlying reasons or incentives for the deal?
    - What benefits were desired to come from the deal? What benefits were planned?
- Describe the integration process, plan and strategy selected for the integration.
    - What was the scope of the integration process?
    - What strategy was used for the integration of information systems? (Renewal, Take-over, Standardization, or Synchronization?)
    - In your opinion, were the selected integration strategies suitable for the deal? Were there other options by which you had to choose from? What factors influenced the choice of a particular strategy?
    - Within what timeframe was the integration completed?
    - Do you personally consider the integration project successful? If not, why?
    - What challenges did you face in the process of integration?
- Describe the overall process.
    - What challenges did you witness in the project?
- What benefits have you obtained from the integration project / deal?
    - Did you gain the planned benefits?
    - If not, in your opinion why were the benefits not achieved? What factors contributed to this?
    - Are the benefits easy to recognize? Can they be identified?
- What planned benefits have not been achieved in the following year of integration? Or in general?

The interviews were conducted following this structure. All of the interviews didn't entirely go with this structure, as is the case with semi-structured interviews. The interviewers wanted to show material and could start talking about something loosely related to the topic, so a level of steering was required by the interviewee.

## 4.3 Thematic analysis

The method used to analyze the collected data from the interviews is thematic analysis. Thematic analysis is used to systematically identify, organize, and offer insights into patterns of meaning (data) across the dataset. (Braun & Clarke, 2012, p. 57) Thematic analysis was chosen as the analysis method for this study as it can be utilized in a variety of ways: to focus on the whole dataset or exam-

ine one aspect of a phenomenon in depth. Further regarding the relatively broad topic of the study and broad results of the semi-structured interviews, identifying and finding the patterns which to analyze, thematic analysis is the most suitable. Thus, a deductive approach will be taken in the thematic analysis to firstly identify specific themes from the ISI synergy and M&A literature that are expected to come up in the interviews. Thematic analysis can be conducted as inductive, in which the researchers allow the data from the interviews to determine the themes, and deductive, in which the researchers examine the data with a preconceived themes that are expected to be found in the data. (Braun & Clarke, 2012) Braun and Clarke (2012) further highlight the importance of transcribing the interviews in detail to include intonation and expressions.

This study will closely follow the suggested thematic analysis process defined by Braun and Clarke (2012). According to Braun and Clarke (2012) there are six distinct phases that must be taken when conducting thematic analysis on a dataset. Firstly, the researcher must familiarize themselves with the data and more so, read and examine the data analytically, critically, and actively. This phase is aimed to for the researcher to become extremely familiar with the dataset they are working with and to recognize items and things which might be of importance. Second, the transcribed dataset and all relevant information must be coded. Coding works as a guideline by which identifying the themes is easier. The process of coding is tedious; thus, Braun and Clarke highly recommend to code any slightly relevant information as removing the codes is easier than adding new ones. In the third phase, searching for themes, the analysis is starting to take shape as the research moves from codes to themes. Braun and Clarke (2006, p. 82) present theme as "capturing something important about the data in relation to the research question and representing some level of patterned response or meaning within the dataset". The dataset works and provides as the basis for the analysis and from which the researcher needs to identify and find meaning. In this phase, the codes identified in the text are to be put together to larger themes. E.g., code: poor system architecture and unreliable integration management could be included under the theme of "operational information technology". The identified themes should work as on their own, but it is important that together they create a meaningful presentation of the study and fit into the same context. As an output, through this phase the researcher creates a map of themes to which they start to work on reviewing potential themes.

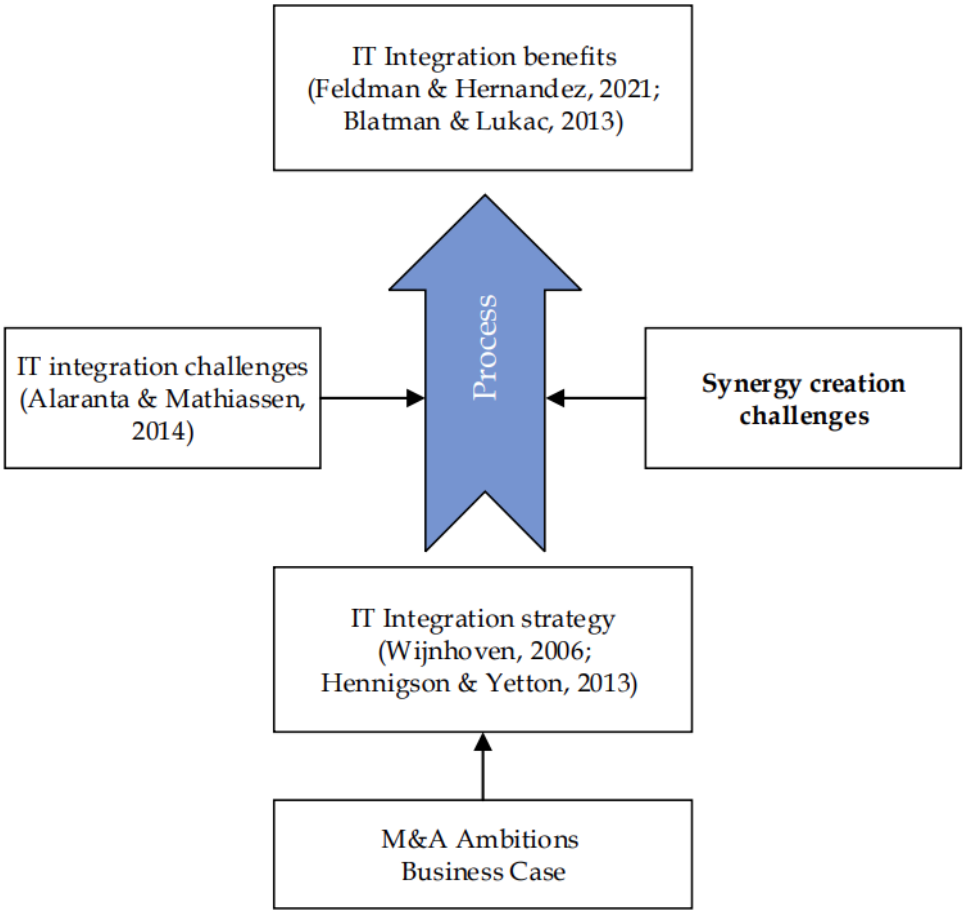
Phase four includes the reviewing of potential themes. This phase, according to Braun and Clarke, is more quality assurance than creating. Through this phase the researchers validate their themes according to the coded data and the dataset, and vice versa. Braun and Clarke propose a set of questions to ask when going through the data, codes, and themes, by which to identify shortcomings. Going through and verifying the work in this step enables the researcher to continue with the analysis knowing that the identification of the data was done correctly. Working with large datasets, e.g., four 1-hour long transcribed interviews, is difficult and quality assurance cannot be overlooked.

In phase five comes defining and naming the themes. This phase involves deep analytical work involved in thematic analysis such as selecting extracts from the data and presenting them in relation to the point the researchers are trying to make. The selected extracts provide the structure for the analysis. In phase six the researchers produce the report. Braun and Clarke propose that the order of presenting the themes is important. The themes should connect logically and meaningfully. If relevant, they also should add to the previous themes.
Regarding this study, the story-like nature of studying behavior and experiences, where this process was described from (Braun & Clarke, 2012), need to be altered to fit the purpose of the study better. The thematic analysis was chosen for this study as the interviewed cases differ in size, systems, and everything between. Thus, it is important to be able identify the challenges and their themes in synergy creation in relation to themes collected from previous studies, but the expressions and feeling behind the synergy creation challenges are not of great importance for this study. For this study, thematic analysis enables the possibility of examining the dataset in a way that creates the clearest themes for challenges and what part of the process of information system integration they are related to.

# 5 THEORETICAL FRAMEWORK FOR ANALYSIS

The theoretical framework for the thematic analysis of the challenges identified in the interviews is based and combined of multiple studies. Combining these studies and the findings of them to work as a one, complete framework for the analysis of the challenges is needed to understand the effects and implications of the challenges which affect the outcome and the process of the ISI more in-depth. The process of integration itself is the key to understanding the framework. The framework starts from the bottom up with understanding the *why* behind the M&A; the overall ambitions and goals set for the merger and why it is being conducted. After understanding the reasons behind the merger, the merging entities need an integration strategy for the combined IT (systems, policies, and infrastructure). The ambitions and goals of the overall M&A dictate this and an appropriate method for the IT integration is chosen (Wijnhoven et al., 2006; Hennigson & Yetton, 2013). The methods varied in relation to the overall ambition of the M&A and the goals. The process of the IT integration is then affected by two factors: IT integration challenges (Alaranta & Mathiassen, 2014) and synergy creation challenges (Blatman & Lukac, 2013). These factors affect the IT integration benefits, or outcomes, which the integrators are after. The benefits that integrators are looking for vary and depend on the M&A context and the chosen IT integration strategy. In the process of integration, the strategy, process, integration challenges, and preferred outcomes are quite known and studied as pictured in Figure 2, but the synergy creation challenges, more particularly of information systems, are not. Further in the framework will be presented that the Alaranta & Mathiassen study on IT integration risks can be utilized to only some extent as it doesn't consider different risks for different integration methods.

Figure 2: Theoretical framework for analysis




## 5.1 The framework for analysis

The framework (Figure 2) begins with understanding the M&A ambitions and the business case behind the merger, as M&A objectives direct the IT and IS integration process. The M&A ambitions differ in levels which in turn state the level of integration needed from the IT side. The business case in this refers to the underlying reasons of why or how the M&A is conducted in the first place. As stated in the study, the alignment between business objectives and IT objectives is detrimental for the success of the merger. Selecting the right strategy for the IT integration according to the M&A ambitions, or business objectives, is the embodiment of the process of aligning business and IT objectives. There were four ways by which an organization can conduct the IT integration process, according to Wijnhoven et al. (2006) these are: renewal, standardization, take-over,

and synchronization. All four processes differ and answer the same type of questions: what are the business objectives which IT integration must align with, what level of integration is needed on a business level, and what IT and IS are we integrating with what? In tables 4 and 5, were presented the IT integration objectives and strategies, respectively, to reach these objectives using the definitions of Wijnhoven et al. (2006). The Feldman & Hernandez (2021) typology of sources of synergies is used to gain an understanding of where the synergies originate from. These include internal, market power, relational, network, and non-market synergies. By combining this information with the definitions of Blatman and Lukac (2013) it can be concluded that synergistic benefits of a merger are derived from the following topics.

Feldman and Hernandez (2021) present the term of Synergy Lifecycles which explain the timing of the synergy realization and how different synergies are realized. This topic covers how each of the five synergy types presented in Table 2, and how these synergies are affected by the level of required integration. This provides additional information and is shown to provide the synergies some context.

Table 8: Synergy Lifecycles (Feldman & Hernandez, 2021, p. 41)

| *Synergy Type* | *Integration required* | *Timing of Initial Synergy Realization* |
|---|---|---|
| *Internal* | Moderate to medium | Medium |
| *Market Power* | Low | Short |
| *Relational* | Medium to High | Medium to Long |
| *Network* | Very low | Immediate |
| *Non-market* | Very High | Very long |

Aligning these synergy types with the integration objectives and methods by Wijnhoven et al. (2006) it is possible to formulate a table which provides a description of the possible synergies when using appropriate methods. By combining these studies, it's possible to create a framework through which the analysis of the study can be conducted. The identification of synergy challenges in ISI is conducted by understanding what challenges affect the process. The combined table was created utilizing Table 4 and aligning Wijhoven et al. (2006) M&A integration ambition levels and IT integration objectives with the integration requirements presented by Feldman & Hernandez, 2021. By doing this, a table is formulated that provides insight into what types of synergies can be expected when using a specific integration method in relation to the integration levels required. The IT integration objectives and methods are able to be mapped to the synergy definitions. This was conducted by using the *integration required* as a common metric between the studies.

Table 9: Integration methods, levels and synergies (Wijnhoven, 2006; Feldman & Hernandez, 2021)

| *IT integration Objective (Wijnhoven, 2006)* | *Integration methods (Wijnhoven, 2006)* | *Synergy types (Feldman & Hernandez, 2021)* | *Integration required (Feldman & Hernandez, 2021)* |
|---|---|---|---|
| **Partial IT integration** | Standardization | Internal | Moderate to medium |
| **IT co-existence** | Synchronization | Market power | Low |
| **Complete or partial IT integration** | Renewal, Takeover, and Standardization | Relational | Medium to High |
| **IT co-existence** | Synchronization | Network | Very low |
| **Complete IT integration** | Renewal, Takeover, and standardization | Non-market | Very High |

The synergy types of Feldman and Hernandez (2021) can be considered as benefits of the merger. It is not entirely possible to be presented in a table format in relation to the risks identified by Alaranta and Mathiassen (2014) as Alaranta and Mathiassen didn't in articulate to which methods the risks are affecting but indirectly stated that these are the overall risks of the M&A process. Further, adding challenges by Blatman and Lukac (2013) to the table provides the framework with quite a comprehensive list of topics from which the analysis can be based on.

A summing up is in place to what is currently included in the framework and how the analysis will be conducted. Table 7 will assist in understanding the synergy side of the study to some extent by combining the information with Feldman and Hernandez synergy types and integration methods. By adding the row of synergy types, it is possible to transpose this information to get a better understanding of possible issues with synergies in relation to the selected method and more easily utilize this combined information in the analysis of this study.

Table 10: Integration failures, objectives, and synergy types (Blatman & Lukac, 2013, p. 31; Wijnhoven et al., 2006; Feldman & Hernandez, 2021)

| | *Consolidation (Takeover)* | *Combination (Standardization)* | *Transformation (Renewal)* | *Preservation (Synchronization)* |
|---|---|---|---|---|
| *Causes of* | Squandering assets | Long-dawn-out assessment exer- | Organizational resistance to | Excessive inefficiency |

| | | | | |
|---|---|---|---|---|
| *failure (Blatman & Lukac, 2013, p. 31)* | Alienating key people<br>Overlooking possible synergies | cises<br>Unresolved issues<br>Inefficient or complex patchwork of systems | change<br>Unrealistic goals<br>Failing to balance long-term solutions and short-term benefits | Unnecessary duplication<br>Missed cost and operational synergies |
| *IT integration objectives (Wijnhoven et al., 2006)* | Complete IT Integration | Complete or partial IT integration | Complete IT integration | IT co-existence |
| *Synergy types (Feldman & Hernandez, 2021)* | Relational<br>Non-market | Relational<br>Non-market<br>Internal | Relational<br>Non-market | Network<br>Market power |

With the Table 10 completed the analysis of the study can begin. We present the findings using this framework and by aligning the different challenges to the correct spaces utilizing the framework. Preliminary findings will be presented according to the framework.

## 5.2 Limitations of the framework

The limitations regarding the framework of synergy challenges need to be presented in more detail. One important factor to acknowledge is that the framework by which that interviewed material was analyzed was not validated with other scholars or industry professionals. The framework is based on multiple studies in the area and through combining these studies it was possible to formulate a framework in which the pieces are placed in correct relation to each other. As integration challenges affect the integration process, synergy creation challenges affect the synergy creation process, which, according to the studies, are achieved through the IT integration process. Another important factor is that reducing the IT integration and other relevant topics to just the term *process* can present the integration in a more slightly straight forward way that it really is. The term *process* in the middle in the scope of this study refers to the IT, or IS, integration rather than broadly to the overall process of merging two entities. Further, as emphasized before M&As are extremely difficult to conduct and the added complexity from IS integration makes the process even more complex. Considering possible next steps for a study in this field, a more in-depth literature review followed by a validation round by professionals and scholars of the field of IT M&A would be appropriate. By validating the framework and addi-

tional findings, it would be possible for IT integrators in the private sector to utilize the framework for their work and possibly identify additional potential challenges affecting the realization of synergistic benefits. Further, synergy creation challenges are very closely tied to the post-merger IT integration but as seen by the framework and Table 10, they can be processed separately from IT integration. Furthermore, one limitation is that the integration level or ambition was used as a common metric when comparing the information between studies. It is possible that the levels of high to low are used in abstract meaning, but they do seem to follow the same lines of suitable integration strategies.

# 6 CHALLENGES IN ISI SYNERGY CREATION

The analysis of the material gathered in the interviews begin by understanding and identifying what kind of issues there are. The material, as stated in chapter 4.3 was thematically analyzed and coded, but some elaborating of the material is in place regarding the qualitative method of the study to provide additional context for the reader.

All three of the interviewees are employed at the same multi-national company with operations all over the globe, which we call Company Alpha. Of the interviewees, P1 works in IT infrastructures in acquisitions, P2 works in project management related topics, and P3 works with financial systems regarding acquisitions. The persons involved in the study have been divided between two acquisitions, Company Delta and Echo. The interviewees were asked to select an acquisition they wanted to talk about, and two interviewees selected the same one. After the description and perspectives of the three interviewees come the chapters where we build upon the concept of synergy in concerning these interviews. Two of the interviewees selected the same merger to showcase and discuss about and P1 selected another one.

## 6.1 Acquisition of Company Delta

The interviews started with the interviewer asking the interviewees a question of choosing a specific deal of which the rest of the question will be based on. P1 presented the acquisition of Company Delta. The merger was done purely in-search of synergistic benefits and conducted as a complete IT integration as the take-over method.

P1: Multiple people in five sites across three countries, all of the IP, fully functioning R&D (research and development) supply chain.

These acquisitions depicted were significant in size and include all business processes. The acquisition mentioned by P1 was conducted because of the human capital and how they have strong sectoral capabilities which in turn provide synergies to company Alphas R&D roadmap. This acquisition was solely based on achieving synergistic benefits. The strategy for the acquisition was very centered around people so anyone wouldn't even be able to notice the change that has happened.

P1: So, the strategy was that the people shouldn't notice that they've been integrated into another company other than that they now should have a Company Alpha logo next to their name. So, they should feel no encumbrance, no hiccups, no stopping of processes or salaries.

The acquisition was explained going smoothly and without major issues. The challenges the integrators faced during the merger was that the business unit was very involved in the integration. This includes a danger of managerial bias or mismanagement. P1 makes a case for management to set roles and responsibilities in the process to provide clear leadership through the process.

P1: You clearly articulate who is responsible for what. And so that you don't do overlapping work…I find alignment always problematic in these transactions.

P1: The IT setup was straightforward and there was only going to be relocation of two sites and that was not going to be needed immediately.

The challenge regarding the overall IT aspect is that the target was using Apple as their operating system provider as the acquirers were using Windows which provided some savings on the acquisition but would probably affect the workers of the target company as some people can be extremely biased in this. The interviewee further reinforced this by stating that overlapping work and not having clear responsibilities makes the acquisition extremely difficult. Further, it was also stated that:

P1: I mean all of these that there's you know need to a clear leader of the projects to go through with it.

Regarding the IS side of the acquisition, the systems co-existed for a while and then the full absorption of the entity came after this. When asked of the benefits that they wanted to realize and how they are tracked the interviewee answered that:

P1: I think probably the best one (tracking metric) we have may sound cynical, but I think the best evidence is that we're not divesting Company Delta at this point.

The interviewee elaborates that they have a tendency to divest. Company Delta acquires other companies and try and make it into something useful for Company Delta, and if they find they cannot they sell (divest) it, often with great loss. The interviewee explained that the business case is extremely difficult to track by monetary means and they should be able to tell the interviewer that a business case was 25 million and they realized 26 million worth of value, but it isn't possible currently and is a big problem. The acquisition of company Delta was left somewhat intact due to the interviewee's specialty being getting acquired entities getting through day-1 of the merger without issues rather than having direct influence over the system environment.

## 6.2 Acquisition of Company Echo

The second acquisition which we present is the acquisition of Company Echo. Company Echo was a large multinational competitor for the acquirer and the reasons for the merger was to enable faster inorganic growth, gain a large portion of the market share, and the acquirees customers. The merger was complex and selecting only one topic under which the merger goes is difficult. It has characteristics of partial, co-existence and complete IT integrations. So, the IT integration method is somewhere between the synchronization and standardization methods, although the company was completely integrated.

P2 presents that IT integration stream must always be separated to two distinct topics: infrastructure integration and application integration. Transforming a up and running target company site to be compliant and work with acquirer. P2 mentions topics and items such as laptops, Wi-Fi-devices, internal Company Alpha network, internet breakouts, and moving people and relocating them if necessary. P2 organizes the replacing of the Company Echo's PCs with Alpha's equipment so that the when the people start their work, they see Alpha's logo, and everything is working, and this must be done in a smooth as possible way. Infrastructure integration plays an essential role in when acquiring larger companies and affects the emotional side of employees as well, even more so if they are required to relocate to a different site. This can create disturbance and issues in the workforce management.

P3 mentions that they acquire a lot of companies, but mostly the acquirements are targeted at smaller companies and done with intellectual property in mind, so the intention is to acquire a company which has unique IP or a patented solution for something useful for company Alpha. Regarding smaller entities, P3 states that it's not necessary to integrate much smaller entities to using the big enterprise resource planning systems which corporate Alpha utilizes, so instead they are consolidated but the smaller entities might be left to their own entities in a sense of systems usage and operating site. Company Alpha also conducts the integration processes through a few key considerations. It's important not affect the continuity of business activities. Any disturbance in the

operating of day-to-day activities can be directly understood as lost monetary gains, and when considering Company Echo, disrupting the business operations can have catastrophic results. Further, don't force systems on targets. Alpha mainly directs the M&A activities towards smaller IP holders, or competition, and when buying the brains, it is quite important to not to lose them due to forcing a large-scale ERP system on the much smaller entity.

P2: We have the Company Echo acquisition, which was even much more complex, and you know, we used to have like 750 applications that we manage and run at Company Alpha and after the Company Echo we had like 1500.

P2 emphasized that the prerequisite for a successful IT integration is that the due diligence must be conducted adequately well. Mergers are conducted in search of benefits and synergies, but there also lies a chance that instead of realizing benefits, the merger realizes complete dis-synergies, information security issues, and the like. If and when everything seems alright, then the merging entities can start to migrate data. In this step also the integrity and similarity of the data plays a significant role. According to P3 an important question to ask is there even a need for migrating the data or is the data useful? P3 presents that archiving the data is a cost-effective option to use in these situations and the topic should be brought up with the stakeholders who utilize the data.

P2 presents an example of synergistic advantage through mergers when they acquired company Echo and one essential planning tool. This tool can now be utilized in company Alpha by feeding data from the company Alpha's HR system to give them an competitive advantage over others. This benefit of the merger creates synergy between the merging entities. The process of the integration was indirectly affected by other challenges in the merger which are presented in the following parts.

P2: The company (Echo) had a strategic planning tool called Carbon that was used to forecast which employees you want to hire. It's like a succession planning tool and we didn't have something similar.

Different mergers require different kinds of dedication and work as P3 states that bigger mergers have quite a lot of variance in success. Reflecting on the integration of company Echo to a different, quite similar sized company, Sierra, the integration process of Echo was somewhat mismanaged. The initial plan was to go with the synchronization strategy and pick the best features from both systems and processes. This two-system setup ran for quite long synchronically and there are still some items left from this two-system setup. The idea was that the best practices (processes and tools) would come up naturally, which of course it doesn't, as the change needs to be rigorously managed to happen. P3 described this to be more of a political debate between the merging parties of which system to use rather than having a logical reasoning behind the selection. This was caused by the different motives of merging companies and

individuals in these companies and the need of these individuals to keep something of their own in the collective IT. P3 states that they somewhat tried to "please" the target by keeping their system, or to "buy their approval" and be more equal than the transaction structure might suggest as the company was bought at shares, so a complete buy out.

When considering the merger of company Echo, the reasoning, or the business case, behind the merger was to buy competition out. Business case validation beforehand and after the merger is quite a complex topic and as the interviewees mentioned, is often done as an approximate. Synergies are difficult to calculate, an example: 10,000 workers and through an IS synergy they all save 5 minutes in their work per day. If the approximate salary is 50,000€ and a year has 247 workdays, this means an annual saving of 27,444 working hours to be reallocated and a savings of 5,5 million €. Quantifying the benefits and then tracking the benefits realization on this level is nearly impossible to do. P3 presents that this is done more as assessing what is currently working and what is considered to be difficult or cumbersome. These entities which instead create difficulties rather than work are then divested or sold.

From P3's interview the challenges they identified related to systems was the fundamental differences in systems and processes. Integrating an ERP system with entirely different processes and data structures is quite difficult and the need to add the added complexity of politics only makes matters worse. Integrating larger entities with fundamentally different systems further requires approval by all the stakeholders as well. This in turn creates additional encumbrance on the process. The benefits are also said to be realized after multiple years after the transaction. The transactions have some matters that remain to be solved and these can create some issues or challenges down the line, these include for example the need for manual processing in some areas of the process. It's mostly thought that integrations are relatively fast, ranging from one to two years in time, whereas the reality is much different. Large scale mergers have different stakeholder forums which need to decide on action items. On the outside it seems easy and straightforward to draw stream plans but when going down to the details, both entities have different dimensions and intricacies in their systems: data transfer challenges are a common topic as even if the other system can send data, the other couldn't receive it as it's in a wrong format. The process of ISI or data migration can be cumbersome and in the case of company Echo, there was issues understanding how to solve some issues.

P3: When we started to do something (with data), often we encountered that it wasn't the smartest way and had to backtrack the previous steps and start over.

After the buying the company and integrating it, the systems become old after some time. This is referred to as the aftermath by P3 and includes a difficult situation of selecting what to do with the system and whether to invest in the system further; does the need for integration end sometime, let the system

be, or is an upgrade coming or not. Furthermore, an important choice for the company Alpha is to decide whether to integrate the targets systems to the ERP at all. It could simply bee too expensive to integrate the systems and thus they are let to coexist.

P2 refers to similar topics but from a different standpoint. P2 talks about the management of different IT partners that had contracts for systems with the acquisition target. This can create immense monetary impacts for profitability and additional frustrations for the management of the merger. All these costs need to be identified in the due diligence phase and they need flow to the business case of the merger to be taken into account for example in the pricing of the transaction. Having to upkeep a system that is not needed after the merger just for the sake of having a contract that binds you to a system with monetary sanctions for disbanding the contract in advance is difficult to manage. P3 presents that these are common issues that they face. The cultural aspect and individual preferences can further affect this.

Change management as an overall topic considering the integration process came up as a challenge in all of the interviewed cases. According to P3 in the case of company Echo, the debates whether to integrate or not was constant. Echo had done things their own familiar way for many years and suddenly Alpha comes and states that things are to be done differently.

P2: The biggest challenge is change management in all of this (integration) process, you need a mindset of change from the receiving (acquired) company and from the acquiring company.

Change management was a key consideration on its own but also with other topics. One important factor that P3 mentioned is that change is often taken with negativity when thinking about creating synergistic benefits through a merger. As stated before, when aiming for synergies, some people could be affected by the change, and this creates a humane reaction for the employees in the target company when considering to integrating to a new system environment.

P3: Synergies mean that less people are needed, and not knowing if this affects me or my colleagues, creates change resistance.

## 6.3 Thematic analysis on the interviews

After transcribing the interviews, thematic analysis was conducted to the material. The transcriptions were coded according to the thematic analysis process and after the coding process the themes of the challenges were formed. The list of themes and important components of the themes across all three interviews are as follows:

- Technology challenges

    - System challenges
    - Process challenges
    - Data, data conversion, and data consolidation challenges
    - Providers and outsourcing partners
- Integration planning
    - Neglecting due diligence
    - Wasting resources and overlapping work
    - Aftermath-challenges
- Leadership and management challenges
    - Mismanagement (two captains, one ship)
    - Managing the change
    - Change resistance
        - Differing motives and desires of companies
        - Differing motives and desires of individuals
        - Uncertain future and unwanted changes
        - Understanding the importance of synergies

The three main themes of the interviews after the coding were identified to be technology related challenges, integration planning challenges, and leadership and management challenges. An important observation here is that even when discussing of IT and IS matters, the discussion was more driven towards the overall management of the integrations, and mergers, rather than specific system details. Differences in technology between integrators who are aiming for complete integration is naturally challenging, as was stated in the transcriptions, but it does seem that the interviewees might be more inclined towards issues related to managing the integration.

As stated in chapter 6.2, change management was perceived as the most challenging part of the integration process. This is not consistent with the studies assumptions regarding IT integration and how change management is seen to *directly affecting* the integration process and its benefits realization. The political atmosphere that is created when two quite large entities are in the process merging is also not mentioned in the literature used for this study's literature review.

## 6.4 Results based on the framework

Reflecting the results of the thematic analysis and the integration challenges, we can plot these challenge items to the framework matrix. (Table 10) The causes of failures by Blatman and Lukac (2013) included examples of possible issues.

Think this through regarding what material is available? Maybe fill all the facts to a list to a different word sheet and think what you want to say?

Regarding both companies, Delta and Echo, the IT integration was conducted as complete IT integration, albeit in Echo the integration started as synchronization caused by the political climate of system selection. This information is not directly consistent with the framework (Table 10) as we can see

that the IT integration method for both was complete IT integration, but the planned benefits included more of market power -related benefits. The following table presents the planned benefits for both, Delta and Echo, targets in relation to the synergy types of Feldman & Hernandez (2021). Source of value is also added to give the reader more context.

Table 11: Planned benefits, Delta

| *Planned benefits, Delta* | *Synergy types (Feldman & Hernandez, 2021)* | *Source of value (Feldman & Hernandez, 2021)* |
|---|---|---|
| *Synergy through R&D capabilities* | Internal and market power (Not consistent) | Efficiency, Market power |
| *Intellectual property* | Internal (Not consistent) | Market power |

As the table above suggests, planned benefits of delta are not quite consistent with the findings of previous studies. But, when looking at Blatman & Lukac (2013) and the causes of failures in complete IT integrations, they identified the squandering of assets, alienating key people, and overlooking possible synergies as possible causes. These instead are consistent with the findings regarding company Delta and the challenges identified through the interviews. The acquirer, company Alpha, was concerned in their planning of benefits to keep people and not drive them out by making poor decisions. Interestingly enough, the business case of Delta was solely based on creating synergies through bought capabilities and these are not directly identified as possible synergy types in the complete IT integration method, according to these studies.

In the case of Echo, the case doesn't remain quite the same. Echo was a complex integration of a large company, and it was completely integrated into Alpha, but ran systems simultaneously to "please" Echo. Instead of one integration method, it can be understood between the synchronization and standardization methods. Both of these methods, according to Table 9, are contingent with the findings below.

Table 12: Planned benefits, Echo

| *Planned benefits, Echo* | *Synergy types (Feldman & Hernandez, 2021)* | *Source of value (Feldman & Hernandez, 2021)* |
|---|---|---|
| *Market share* | Market power (consistent) | Market power |
| *Competition buyout* | Market power (consistent) | Market power |
| *Inorganic growth* | Market power (consistent) | Market power |
| *Customers* | Network (consistent) | Structural position |
| *Capabilities* | Internal (consistent) | Efficiency |

Echos planned benefits are overall very consistent with findings of Feldman & Hernandez (2021). Most of the benefits are leaning into the market power category for synergy types.

Regarding the challenges Alpha faced in the integration Alaranta and Mathiassen (2014) proposed risk categories for post-merger ISI by risk categories and key risks. The identified themes of technology challenges, integration planning, and leadership and management challenges can be mapped inline with Table 6 findings. Technology challenges fall under the configurational incongruence where there are differences in data, systems, infrastructure, or IT practices. In the case of Echo, this risk was realized as was described previously by having merging partners experience a "us and them" scenario regarding the system selection which was caused by merger politics and fundamentally different systems. Integration planning does not directly fall under any category by Alaranta and Mathiassen, as the risks they identified regard the post-merger ISI process. Leadership and management challenges are included in the key risks of managerial bias, stakeholder conflict, and configurational incongruence. Change management was the identified key challenge and thus it is overrepresented in the analysis when comparing the fit to the risks.

As stated by the literature in chapter 2.3, planning is the most common way to fail to capture synergies. Shaver (2006) presented two mechanisms for synergy capture failure, contagion and capacity effects. The contagion effect is indeed consistent with the findings of this study as one interviewee of case Echo stated that conducting rigorous due diligence is important to ensure that the target doesn't have any issues which could affect the merger going forward. Technology challenges is further affected by the possibility of contagion effect as mentioned in the interviews inheriting bad data from the acquired entities systems creates challenges for the future. Leadership and management can have a contagion effect if the poor management decisions spill over to the other entity. An example from the interviews is the system decision which involved going back and forth with the acquiree about which system to select. Challenges in line with capacity effect weren't directly addressed during the interviews, but an important note is that the capacity effect regards the process and how increased capacity utilization can lead to challenges when reacting to positive shocks in the business environment.

The table below presents the three main themes in relation to Shaver (2006) findings.

Table 13: Synergy capture challenges and contagion effect

| *Synergy capture challenges (interviews)* | *Contagion effect (Shaver, 2006)* |
|---|---|
| Technology challenges | Yes |
| Integration planning | Yes |
| Leadership and management | Yes |

Ficery, Herd, and Pursche (2007) defined the slip-ups of synergy creations as: defining synergies too broadly or narrowly, missing the window of opportunity, incorrect or insufficient use of incentives, not having the right people involved in the synergy capture, mismatch between culture and systems, and using the wrong process. All of these are consistent with the findings of this study and were included in the challenges identified through the interviews.

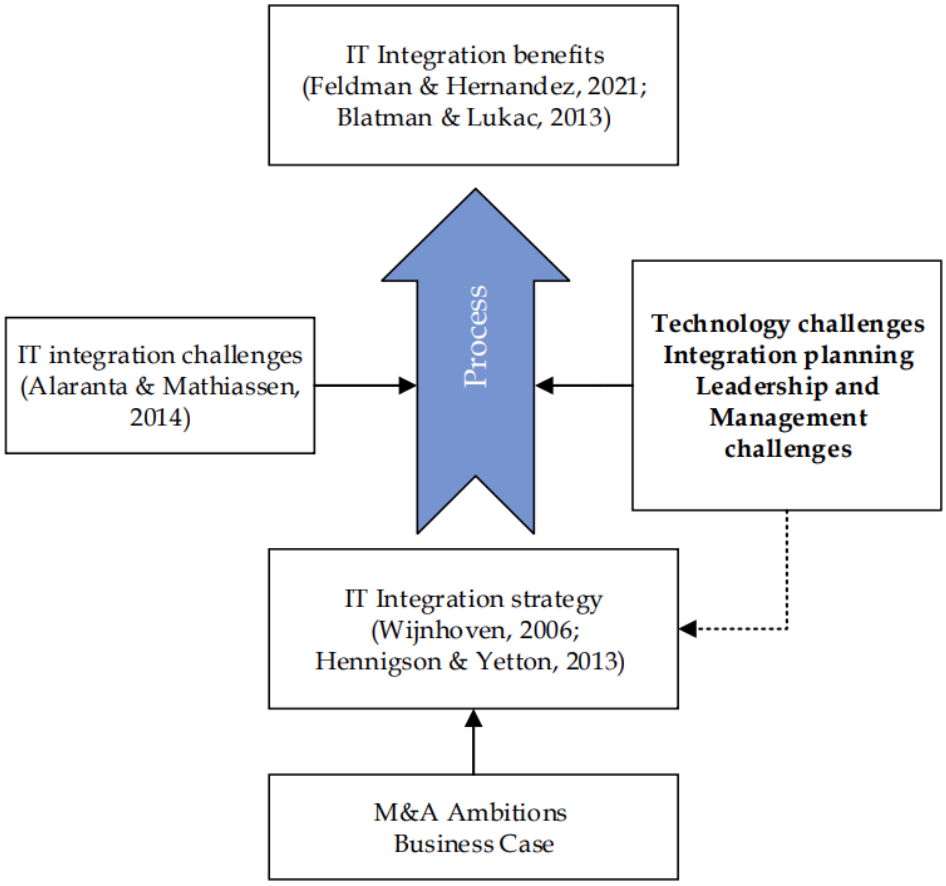
Table 14: IT integration challenges and synergy slip-ups

| *IT integration challenges (interviews)* | *Synergy creation slip-ups (Ficery, Herd, & Purcsche, 2007)* |
|---|---|
| *System challenges* | Mismatch between culture and systems |
| *Process challenges* | Mismatch between culture and systems |
| *Data, data conversion, and data consolidation challenges* | Mismatch between culture and systems |
| *Providers and outsourcing partners* | - |
| *Integration planning* | Using the wrong process |
| *Neglecting due diligence* | Not having the right people involved in the synergy capture |
| *Wasting resources and overlapping work* | Missing the window of opportunity |
| *Aftermath-challenges* | Defining synergies too broadly or narrowly |
| *Leadership and management challenges* | Incorrect or insufficient use of incentives |
| *Mismanagement (two captains, one ship)* | Mismatch between culture and systems |
| *Managing the change* | Not having the right people involved in the synergy capture |
| *Change resistance* | Mismatch between culture and systems |
| *Differing motives and desires of companies* | Incorrect or insufficient use of incentives |
| *Differing motives and desires of individuals* | Incorrect or insufficient use of incentives |
| *Uncertain future and unwanted changes* | Missing the window of opportunity |
| *Understanding the importance of synergies* | Defining synergies too broadly or narrowly |

All but one of the IT integration challenges was identified according to the slip-ups. Providers and outsourcing partners didn't fall under the slip-ups categories and is a finding of an area to be considered for possible future studies of managing IT related third parties or system providers in M&A. But all of the

challenges that were thematically analyzed from the interviews are present and consistent with the synergy creation slip-ups. The first research question was that "what challenges the buyer side faced or identified in actualizing IT synergy benefits in the M&A project"? This research question was answered by interviewing three key informants, thematically analyzing the transcriptions, and then comparing the findings to the material gathered in the literature review. Table 14 presents the final findings of IT integration challenges identified and mapped to the synergy slip ups. As can be seen, most of the identified challenges can be seen to affect the realization of synergies via different mechanisms. Mismatch between culture and systems (count: 5) was the most common slip-up that could happen which affects the realization of synergies. This could be mainly caused by incompatible systems and data, and the cultural differences of merging entities. Incorrect or insufficient use of incentives (count: 3) was tied to the change management challenges and could affect the commitment to the new entity. Not having the right people involved in the synergy capture (count: 2) was then assigned to due diligence but also to the overall change management. This slip-up can happen from both as synergy capture is started from the due diligence phase and needs to be managed during the whole integration process to realize the synergies. Missing the window of opportunity (count: 2) was associated with wasting resources and overlapping work and uncertain future and unwanted changes. These topics were assigned to the missing opportunities as the capacity effect is quite the same mechanism as binding resources to one thing leads to missing the opportunity for something else. Defining synergies too broadly or narrowly (count: 2) was associated with the challenges of aftermath and understanding the importance of synergies. Defining synergies was seen as a meaningful challenge to overcome in the interviews and to know what you are aiming for is important regarding the success of the synergy capture. Understanding the importance of synergies is detrimental for employees to understand how the synergies could affect their work. Defining these too broadly or narrowly can create issues and realizing benefits will become difficult. Using the wrong process (count: 1) was associated with the planning of the integration. The most important thing in integrations is to plan as much ahead as possible to ensure that the integration goes smoothly. As seen from case Echo, the project started with politics of which system people want to use and this created issues down the line. The wrong process was used to decide which system is utilized from here on which affected the timeline of the synergy capture of using only one system. Another important factor is that the challenge of integration planning indirectly affects the process. Integration planning is an activity that is conducted before the process of integration. This can be thus said to be affecting the previous phase and being more related to the strategy, but failing in integration planning has implications for the success of the integration process as was the case with company Echo's integration planning. Furthermore, this is the reason a dotted line needs to be drawn to the IT integration strategy as well.

Figure 3: Tentative framework in relation to challenges




As the complex is the process of IT integration, so are the challenges. The findings of this study indicate that IT integration challenges indeed directly affect the synergy capture mechanisms. There is no distinctive difference between the IT integration challenges and IT synergy capture challenges as the relationship seems to be more causal rather than a separate mechanic causing challenges for the process. Thus, the challenges identified in the interviews are causing the IT synergy capture challenges to realize. This finding implicates that at least the identified three challenge themes, technology, planning, and management, are affecting the capture of possible synergies. It's important to note that there are possibly many other challenges under other categories, but these three were identified in this study. Further, it is important to note that this is a tentative framework that was updated with the findings of three semi-structured interview samples. The framework isn't validated through other scholars or professionals and thus is a tentative framework.

# 7 CONCLUSIONS

This study provides new and needed information for the field of IT integrations in M&A in the field of ISI. The IT M&A field is a difficult research topic for a few reasons: finding people willing to talk about involvement in in-depth M&A processes and having the information to talk about IT related matters is quite limited. The likes of this research can help other scholars to take on the challenge of researching the IT M&A field further and to create new knowledge on these complex topics. IT M&As have vast and diverse background in literature and the topic is affected by the constantly changing IT environment, but not studied as in depth as other fields are. The study started with a literature review to the key concepts of the field of IT M&A: synergies, IT integration and ISI process, and the challenges of IS integration. Key informant interviews were conducted with case-like interviews which provide in-depth information about the matter. This key informant interview style paired with the semi-structured interview method made it possible for the study to gather quite a lot of qualitative information from a relatively small number of samples. One important limitation of this study is that the interviewed key informants were all from the same organization. Further, the semi-structured interviews gave too much room for interpretation differences in the questions and answers were quite different between the three interviewees. For example, some showed additional material, and some didn't. Also, important to note is that the two cases, Delta and Echo, don't cover the whole field of IT integration but instead a small sample of possible integration methods.

The main finding of this study is a thematically comprised list of IT integration challenges which are presented along the common synergy slip-ups. The IT integration challenges were mostly consistent with current studies and when mapped to the framework items in turn confirmed the former study's findings. As stated in the last paragraph of chapter 6.4, IT integration challenges identified in the interviews are causing the IT synergy capture challenges to realize as opposed to the working hypothesis that there are additional and different mechanisms for the realization of synergies. Thus, IT integration success factors can be understood as the prerequisites of synergy capture. The findings

of the study are consistent with current research of the topic of IT integration and synergy capture and realization. The interview findings were coded and combined to a list of themes inside the text. The three main themes of challenges that were identified were technology challenges, integration planning, and leadership and management challenges. These were then observed through the framework of chapter 5.1 and validated utilizing previous literature by Alaranta and Mathiassen (2014), Shaver (2006), and Ficery, Herd, and Purcsche (2007). The findings were consistent with previous studies and these identified challenge themes can be regarded as affecting the synergy realization of a merger. Thus, all three challenges also play a major role in the success of the IT integration as realizing synergies are tied to the success of a merger as other business goals are.

Regarding recommendations for future studies of this topic, as stated in chapter 2.3, including the UTAUT model in empirical studies could provide some insight into how new systems are accepted in the context of M&A. Change management was seen as one of the key challenges integrators are facing and the UTAUT model could be used to shed some light on this challenge and understand the acceptance of technology on the target's side. Albeit, finding an ongoing merger and having the ability to study it for before, during and after the execution of the merger and staying as a neutral party during the process is close to impossible. Studying mergers by conducting key informant interviews is relatively easier but still requires knowledge of the field of M&As to gain access to the right people. To gain a more comprehensive look at the field of IT integration in M&A, a broader stance must be taken in terms of data collecting techniques. Thus, another direction for a future study in this field is to develop a quantitative questionnaire in relation to the framework of chapter 5.1 to be sent to a set amount of identified key personnel working with IT integrations. This could potentially provide a large amount of validation for the challenges of synergy creation and give insight to different industries. The future of this study is to gather a larger sample size, conduct similar interviews with similar methods but also validate the framework with the help of professionals in the field and other subject matter scholars.

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