

IT-BASED VALUE CREATION IN SERIAL ACQUISITIONS

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Abstract

The extant research on post-acquisition IT integration analyzes how acquirers realize IT-based value in individual acquisitions. However, serial acquirers make 60% of acquisitions. These acquisitions are not isolated events, but are components in growth-by-acquisition programs. To explain how serial acquirers realize IT-based value, we integrate and model the findings on individual acquisitions from the extant literature, and extend that model to explain the effects of sequential acquisitions in a growth-by-acquisition strategy. This extended model, drawing on the Resource-Based Theory of strategy, comprises seven propositions that affect post-acquisition IT integration. The model proposes that successful acquisitions are contingent on the acquirer's IT capabilities, business and IT alignment, and infrastructure scalability. We begin the process of validating this model by investigating a longitudinal case study of a growth-by-acquisition program.

Keywords: Serial acquisitions, acquisition program, IT integration, Resource-based theory.

1 Introduction

Many organizations, including, for example, Cisco and Siemens, have publicly espoused acquisition strategies for capturing economies of scale or acquiring growth options. These and other ‘serial acquirers’ (Laamanen and Keil 2008) complete several acquisitions each year. The challenges to do this include the extent of, and processes for, integrating the acquirer’s and the acquisition’s IT resources (henceforth called post-acquisition IT integration).

Without IT integration, the combined organisation cannot function effectively (Mehta and Hirschheim 2007). Sarrazin and West (2011) report that 45-60% of the expected business benefits from acquisitions are directly dependent on IT integration. In addition, Rodgers (2005) cites factors relating to IT integration as the third most important reason for acquisition failures. These are frequent, with two thirds of acquisitions failing to create financial value for the acquirer (Bourgeois and Patel 2009).

Two emerging streams of literature are beginning to explain and seek solutions for successful post-acquisition IT integration. One stream explores the characteristics of the post-acquisition IT integration challenge (Johnston & Yetton, 1996; Wijnhoven et al., 2006; Mehta & Hirschheim, 2006; Henningsson & Carlsson, 2011). This literature identifies four IT integration processes: Absorption, Co-existence, Best of Breed and Renewal. The other stream explores the acquirer’s capabilities to manage successful post-acquisition IT integration (Stylianou et al. 1996; Robbins and Stylianou 1999; Tanriverdi and Uysal 2011; Henningsson 2012). Collectively, this research contributes to our understanding of how post-acquisition IT integration creates value.

However, the extant research has two limitations that make the explanation of post-acquisition IT-based value creation incomplete. The first is that the extant literature lacks a model to integrate the two streams of post-acquisition IT integration research and to distinguish between different kinds of post-acquisition IT integration capabilities. The stream of research on the post-acquisition IT integration challenge concludes that the four processes represent fundamentally different IT integration challenges (Johnston & Yetton, 1996; Wijnhoven et al., 2006; Mehta & Hirschheim, 2006; Henningsson & Carlsson, 2011). In contrast, the stream of

research on the acquirer's capability to manage post-acquisition IT integration treat the post-acquisition IT integration capability as a one-dimensional continuum that does not recognize the heterogeneity of the post-acquisition IT integration challenge (Stylianou et al., 1998; Robbins & Stylianou, 1999; Tanriverdi & Uysal, 2011; Henningson, 2012).

The second limitation is that the extant research is restricted to the analysis of individual acquisitions. An exception is Henningson (2012) who reports learning effects in and between post-acquisition IT integration projects. We believe that, consistent with the general research on multiple acquisitions (e.g. Fuller et al. 2002; Laamanen and Keil 2008), the understanding of how serial acquirers create IT-based value is incomplete without considering the effects of sequential acquisitions. For example, both Wijnhoven et al. (2006) and Henningson (2012) propose that investments to improve IT infrastructure scalability can lead to more efficient post-acquisition IT integration. While necessary to support a growth-by-acquisition strategy, the investments could not be justified to support a single acquisition.

Historically, 60% of all acquisitions have been made by serial acquirers, defined here as acquirers who make at least two acquisitions every three years (Kengelbach et al. 2011). Typically, these acquisitions are small and focused on specific business benefits. Rather than executing isolated deals, serial acquirers execute streams of mutually interrelated acquisitions aimed at specific strategic targets that form part of more extensive and complex acquisition programs (Laamanen and Keil 2008).

Addressing the above two limitations, the question framing this research is:

- *How do serial acquirers realize IT-based value in growth by acquisition programs?*

Serial acquirers are frequently structured as multi-business organizations (MBOs). They acquire independent SMEs or business units from other MBOs (Laamanen and Keil 2008). In this paper, we exclude both the analysis of a merger between two MBOs and the acquisition of an MBO by another MBO. These acquisitions are the subject of another paper. This restriction limits the generalizability of the model developed here. However, the domain of post-acquisition IT

integration by serial acquirers is both sufficiently theoretically important and under-researched to justify and motivate this paper.

We adopt the resource-based theory (RBT) as our analytical framework to develop a model of IT-based value creation in a growth-by-acquisition strategy. This model is developed in two steps. In step one, we explain how to select and implement an IT integration process to realize the potential business value. The unit of analysis is the post-acquisition IT integration process. The model includes both the mechanisms by which the integration process creates value, and the ex-ante and ex-post contexts.

In step two, we examine how serial acquirers sustain IT integration across multiple acquisitions. To understand this, acquisitions must be modeled as components in an acquisition program and not as independent events (Laamanen and Keil 2008). The analysis contributes to a resource-based model of how serial acquirers realize IT-based value in a growth-by-acquisition strategy.

We begin the process of validating this model by investigating a longitudinal case study of a growth-by-acquisition program. Trelleborg Engineered Systems (TES), Sweden, made the strategic decision to transform from a diversified conglomerate to an industry group focused on polymer technologies.

2 Related literature and model development

The RBT (Peteraf 1993; Grant 2002) has a proven track record in the IT literature to explain how IT resources contribute to business value (Wade and Hulland 2004) and, in the general literature on acquisitions, to explain how acquisitions create value for the acquirer (e.g. Capron et al. 1998). RBT directly links IT resources to acquisition value creation. As Wade and Hulland (2004, p. 109) conclude: *“The [resource-based] theory provides a valuable way for IS researchers to think about how information systems relate to firm strategy and performance. In particular, the theory provides a cogent framework to evaluate the strategic value of information systems resources.”*

Within the RBT framework, acquirers combine the resources of two organizations to create value (Sudarsanam 2003). Resources are the tangible and intangible assets that a business owns or controls (Capron et al. 1998; Grant 2002). An organizational capability is a particular type of intangible resource, specifically, the ability to perform an action, using the available resources, for the purpose of achieving a particular end result (Grant 2002). So, a capability is the pre-requisite necessary to effectively deliver a process, specifically, in this paper, a post-acquisition integration process.

Early research on post-acquisition IT integration (See, for example, Johnston & Yetton, 1996; Giacomazzi et al., 1996) reports that acquirers adopt one of four generic processes to realize post-acquisition IT integration: Absorption, Co-existence, Best of Breed or Renewal.

Subsequently, research investigates the *selection* and *implementation* of these post-acquisition IT integration processes (See, for example, Wijnhoven et al. 2006; Alaranta and Henningson 2008). These two IT capabilities correspond to two high-level organizational capabilities that Zollo and Singh (2004) show are critical for post-acquisition value creation in organizations. One is the diagnostic capability to identify the threats and opportunities for post-acquisition resource combination, and to estimate their potential value. The other is the capability to implement successfully the integration strategy selected and realize the expected post-acquisition benefits.

Selecting the right IT integration strategy is contingent on the expected IT-based business benefits from the acquisition (Wijnhoven et al., 2006; Mehta & Hirshheim, 2007; Henningson & Carlsson, 2011). For example, an absorption IT integration process is designed to realize scale-based, cost benefits post-acquisition. Implementing the IT integration strategy selected is contingent on pre-acquisition IT deployment capabilities (Tanriverdi & Uysal, 2011; Giacomazzi et al., 1997; Stylianou et al., 1996; Robbins and Stylianou, 1999). For example, a successful IT absorption strategy is contingent on the acquirer's capabilities to extend pre-acquisition IT resources to support the acquisition's business processes (Wijnhoven et al., 2006).

The analysis below shows that each of the four IT integration processes realizes different forms of IT-based value creation. The executions of the processes are contingent on different pre-acquisition IT resources, including IT capabilities. Importantly, these IT resources cannot be developed in the short period between identifying a potential acquisition and beginning the IT integration project. The time frame for their development is measured in years rather than weeks and, frequently, occurs over a number of acquisitions.

The analysis also identifies business and IT alignment as a moderator variable of the effect of the IT integration process on post-acquisition value creation. The business and IT strategic alignment literature shows that IT alignment improves organizational performance (Tallon and Pinsonneault 2011). Consistent with that literature, Johnston and Yetton (1996) and Wijnhoven et al. (2006) and Mehta and Hirschheim (2007) show that IT alignment post-acquisition is critical to achieve the expected acquisition benefits. Therefore, an acquisition that reduces alignment post-acquisition reduces performance and limits the benefits to be realized.

For serial acquirers, the post-acquisition IT resources, and business and IT alignment, are the pre-acquisition IT resources and context to support the next acquisition. Consequently, to sustain a successful growth-by-acquisition strategy over a series of acquisitions, an acquirer must satisfy two conditions. One is to sustain high pre-acquisition IT resources. The other is to sustain high business and IT strategic alignment. Cumulatively, acquisitions that reduce alignment reduce post-acquisition performance and limit the organization's capability to effectively integrate subsequent acquisitions.

To develop our model of post-acquisition IT value creation, we begin by defining four IT integration processes and examine the logic by which they redeploy resources to create IT-based value. Then, the criteria for selecting the appropriate IT integration process are explained and we examine the implementation capabilities to deliver post-acquisition business benefits. Finally, we explore how acquisitions at one point in time affect subsequent acquisitions and the potential success of a growth-by-acquisition strategy. Together these components comprise a process model of post-acquisition IT value creation for successful serial acquirers.

2.1 IT Integration Processes and IT-Based Value Creation

The resource-based strategy literature on acquisitions partitions integration processes into *path-dependent* and *path-breaking* acquisitions (Capron et al. 1998; Karim and Mitchell 2000; Zollo and Singh 2004). Path-dependent acquisitions redeploy *existing* organizational resources from the acquirer to the acquisition or from the acquisition to the acquirer to create value (Capron et al. 1998; Karim and Mitchell 2000; Zollo and Singh 2004). Path-breaking acquisitions use the acquirer's and the acquisition's resources to develop *new* resources.

Absorption, co-existence and best of breed processes create value in path-dependent acquisitions. The renewal process creates value in path-breaking acquisitions. Each IT integration process realizes different post-acquisition benefits. These benefits are contingent on the different IT integration mechanisms embedded in each IT integration process. The differences between path-dependent and path-breaking acquisitions are important because the former are integral components of any growth-by-acquisition strategy. The latter is a discontinuous and, therefore, one-off strategic option.

2.1.1 IT integration processes

In absorption processes, the target's IT resources are retired and replaced by the acquirer's existing IT resources. Data from the target's IT systems are converted and transferred to the acquirer's systems. The assumption is that the target's operations can be supported by the acquirer's IT resources (Johnston and Yetton 1996; Wijnhoven et al. 2006).

Co-existence can be partial or full. In the former, some of the acquisition's IT resources are replaced by IT resources from the acquirer, leading to partial standardization with some IT resources shared between the acquirer and acquisition. The acquisition's retained IT resources do not replicate IT resources in the acquirer. In full co-existence, the acquisition's entire IT resources are retained. Where necessary, bridges are built between the acquirer's IT and the IT retained from the acquisition. This approach suits acquirers with limited IT-based benefits (Johnston and Yetton 1996).

Best of breed involves a conscious selection to be made between the acquirer's and the acquisition's IT-based business processes (Johnston and Yetton 1996). This strategy is adopted when some of the acquisition's IT-based business processes are considered superior. These business processes are frequently rebuilt on the acquirer's IT platform.

In renewal processes, IT resources in both the acquirer and the acquisition are replaced by developing new IT resources. This process is adopted when the combined IT resources of the acquirer and the acquisition cannot support the new business strategies and capabilities in the post-acquisition organization. This is the case, for example, when the acquisition is made to reposition the acquirer's business strategy from a niche to a scale-based strategy.

2.1.2 Mechanisms to create IT-based value

From a resource-based view, each IT integration process combines the acquirer's and the acquisition's resources by a distinct value creating mechanism that realizes different business benefits. The *IT expansion* mechanism redeploys IT resources from the acquirer to the acquisition, leveraging the absorption IT integration process. The *IT extension* and *enhancement* mechanisms redeploy IT resources, and joint IT and business resources, from the acquisition to the acquirer, leveraging the co-existence and best of breed IT integration processes, respectively.

IT expansion is the mechanism in an absorption integration process by which the acquirer's IT resources are deployed to the acquisition (c.f. Capron 1999). The acquirer's IT resources are expanded to support the new physical locations, production facilities or sales offices, that are the result of absorbing the acquisition's operations (Wijnhoven et al. 2006; Tanriverdi and Uysal 2011). This is also referred to as 'deepening' of resources (Karim and Mitchell 2000). The acquisition's IT resources are then decommissioned. Value creation is contingent on economies of scale to reduce IT costs.

IT extension is the mechanism by which a co-existence IT integration process creates value by deploying the acquisition's unique IT resources to the combined organization. IT resources, for example a dedicated production system, are transferred from the acquisition to the acquirer to

support the business capabilities in the acquisition that cannot be supported by the acquirer's IT resources. Value creation is contingent on economies of scope to increase revenues.

IT enhancement involves the deployment of integrated business and IT resources, for example, an order entry and delivery system or a supply chain management system, from the acquisition to the acquirer. The acquisition's IT-based business systems, which are superior to the acquirer's corresponding systems, are deployed across the business units in the acquirer (Zollo and Singh 2004). Value creation is contingent on replacing IT-based business systems in the acquirer with more efficient and/or effective systems from the acquisition.

IT re-invention involves IT resource recombination, when new IT resources are developed and deployed to leverage new business strategies. This occurs when pre-acquisition IT resources in the acquirer and acquisition cannot support the post-acquisition new business strategies (Capron et al. 1998). IT resources are combined with business resources with which they were not combined pre-acquisition. Value is created by organizational transformation to leverage a more effective way of doing business.

Each of the four different value mechanisms above is the primary source of value creation for one of the four IT integration processes. They are the primary, but not exclusive value mechanisms. For example, partial co-existence integration processes to realize economies of scope also deliver some economies of scale to reduce costs contingent on IT expansion.

However, the primary strategic benefits of an extension-based acquisition are the economies of scope to increase revenues, and not the economies of scale, which are secondary. Similarly, if the strategic focus of an acquisition is cost reduction, an absorption process would be chosen and any scope-based benefits would be secondary.

- Proposition 1: Each of the four IT integration processes leverages different primary acquisition benefits.

2.1.3 *The moderating effect of business and IT alignment*

In MBOs, resources are built and strategies are formed at both the corporate and SBU levels (Grant 2002). Corporate strategy specifies how to compete as an organization. This includes the

choice of markets in which to compete, the level of sharing of resources, including IT resources, across the organization by the SBUs, and the acquisition and divestiture of business units.

Strategies at the SBU level specify how to compete in each SBU’s specific market.

Reynolds et al. (2010) develop a model to align business and IT strategies at both the corporate and SBU levels. The model identifies four components to be aligned. These are *corporate strategy*, *SBU strategy*, *Corporate IT platform*, and *SBU IT application portfolios*. Together, the corporate IT platform, and SBU IT application portfolios comprise the MBO’s IT resources.

Three dimensions of alignment explain the relationships between the four components (Figure 1). In functional alignment, IT capabilities leverage business capabilities to create value.

Structural alignment specifies how business and IT strategic decision rights are assigned.

Dynamic alignment models the other two forms of alignment over time. Here, we are concerned with the limited issue of developing IT alignment pre-acquisition and maintaining functional and structural alignment post-acquisition.

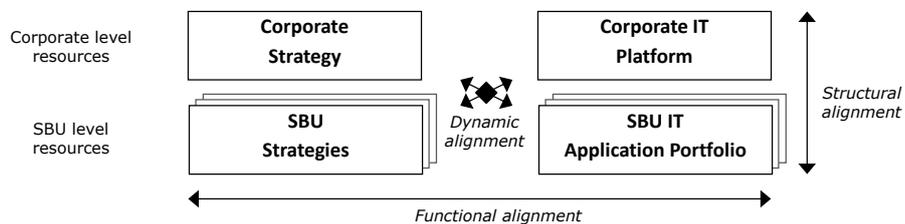


Figure 1. Business and IT Strategic Alignment

Consider how the four IT integration processes potentially affect the different alignment dyads within and between the corporate and SBU levels. First, the simplest integration process is absorption. The acquisition is absorbed into an existing SBU in the same business domain within the acquirer. The SBU’s IT is expanded to support the acquisition’s business processes. Assuming that the acquisition’s business process can be supported by the acquirer’s IT resources without reducing functional alignment, there is no change in the pre-acquisition IT functional, structural or dynamic alignment.

Second, recall that the extension mechanism leverages a co-existence IT integration process to realize economies of scope to increase revenues. Therefore, the acquisition is structured as a new SBU, focusing on its pre-acquisition markets as a growth option for the acquirer. Its IT support that cannot be provided by the acquirer's corporate IT platform is retained as the IT application portfolio, owned and managed by the SBU. IT integration is limited to the technical challenges of establishing alignment between the acquirer's corporate IT platform and the SBU's unique IT application portfolio. The pre-acquisition level of business and IT strategic alignment is sustained.

Third, a best of breed IT integration process enhances the acquirer's IT-based business processes and can increase IT functional alignment, particularly in the early stages of a growth-by-acquisition strategy. The acquisition's superior IT-based business processes replace the acquirer's equivalent business processes. Alignment involves two steps. The first is porting the superior business processes to the acquirer's corporate IT platform or rebuilding them on that platform. The second step is to roll out the new business processes across the acquirer's SBUs for which the processes are relevant.

Fourth, an IT integration process of renewal transforms the way an organization competes. In this case, all pre-acquisition business and IT strategic dyads, within and between the SBU and corporate levels, are potentially subject to change and the need to be re-aligned. However, for a serial acquirer, we find it unlikely, and know of no existing example, where an acquisition SBU generated renewal across the MBO. Instead, it transforms only one SBU.

- Proposition 2: IT-based value creation in acquisitions by MBOs is contingent on functional, structural and dynamic post-acquisition business and IT alignment.

2.2 Selecting the appropriate IT Integration Process

The general research on acquisition describes acquisitions as driven by various synergistic effects that are captured by different integration mechanisms (Barkema and Schijven 2008; Laamanen and Keil 2008; Haleblian et al. 2009). In the same acquisition, the acquisition's supply chain system may be integrated corporate-wide post-acquisition in a best of breed

process, while the post-acquisition integration of the project management system unique to the acquisition's R&D function is restricted to the acquired business unit within a co-existence integration process (Henningsson and Carlsson 2011).

The selection process includes the analysis of the strategic and organizational fit of the acquirer and the acquisition, to identify how the mix of business benefits can be maximized by combining organizational resources (See, for example, Alaranta & Henningsson, 2008).

Forming part of this general selection capability, we define the IT selection capability as the ability to *diagnose the right mix of IT integration processes* in combination with *securing access to the acquisition's critical IT resources* post-acquisition.

Access to critical IT resource must be secured by the IT selection capability because some of those resources may not be located within the acquisition business unit when the acquisition is an SBU within another MBO. In that case, the locations of those resources must be identified during the due diligence process and access to them included in the acquisition contract.

Otherwise, by the time that the need to transfer those resources is recognized during the IT transition implementation phase, it may be too late or too costly to negotiate access to them.

Certainly, unless the resources are specified in the contract, the vendor's project manager would be unwilling to devote resources to help to identify and release them (Bohm et al., 2012).

Each of the four IT integration processes imposes different requirements on both the diagnosis and securing components of the IT selection capability. Before selecting an IT absorption process, it is critical to determine whether the acquirer's IT resources can support the acquisition's business processes, without reducing business and IT functional alignment. In addition, it is critical to retain IT support for the acquisition from the vendor until the acquirer's IT resources have been extended to support the new business processes.

A co-existence IT process is contingent on the capability to diagnose the unique IT resources that must be transferred to the acquirer to support the new business. This diagnostic capability requires both a deep understanding of the acquirer's IT resources and the way in which the acquisition's IT resources leverage business capabilities. Otherwise, either non-unique IT

resources may be transferred or unique IT resources may not be transferred. The former case increases the integration cost and IT complexity due to replicated IT resources and a reduction in post-acquisition business and IT functional alignment. The latter case decreases the post-acquisition performance because critical IT resources to leverage the business capabilities are lost and have to be rebuilt. This is also the case when the critical IT resources cannot be duplicated or carved out from the MBO vendor (Böhm et al. 2011).

A best of breed IT process is contingent on the capability to diagnose the superior IT-based business processes of the acquisition and the IT resources that must be transferred to the acquirer to support the new business. In a best of breed IT integration process both the relevant business and IT resources must be transferred to the acquirer. Consequently, a best of breed process risks reducing the functional alignment, if post-acquisition access to the superior IT resources are not negotiated.

Finally, an IT renewal processes is adopted only when potential benefits cannot be realized by redeploying existing IT resources. Developing new IT resources is more resource and time consuming than reusing existing resources. Therefore, the locations of all relevant IT resources must be identified during the due diligence phase and access to them during an extended transition phase included in the acquisition contract.

- Proposition 3: Effective IT selection capabilities identify the optimal mix of acquisition IT integration processes and the IT resources to which access must be secured.

2.3 Implementing IT integration processes

IT implementation capability is the ability to redeploy IT resources post-acquisition. The successful implementation of each of the four IT integration processes requires different capabilities (Wijnhoven et al., 2006; Henningsson, 2012). In this way, the optimal mix of IT integration processes imposes different requirements on the IT implementation capability and the IT resources to be redeployed.

2.3.1 Technical and organizational implementation processes

The IT expansion mechanism combined with an IT absorption process involves the deepening of existing IT resource exploitation (Karim and Mitchell 2000). Karim and Mitchell describe resource deepening as a simple process. The capabilities required to implement this process are limited. They include the capability required during the due diligence to identify and locate the data to be acquired, and to negotiate access to those data in the acquisition contract. The implementation, specifically, the conversion and transfer of data, is then a straightforward activity. Most organizations would have the capabilities to implement an absorption IT integration process.

Co-existence in combination with IT extension is more complex compared with IT expansion (Karim and Mitchell, 2000). Two types of capability are required. One is the capability to identify the unique IT resources that must be transferred to the acquirer. The other is the capability to integrate the acquisition's unique IT resources with the acquirer's IT platform. This implementation capability requires a deep understanding of the acquirer's IT platform. Without that, it would be difficult to design the architecture extensions and the technical interfaces required to integrate the acquisition and the acquirer's IT platform (c.f. Markus 2000). Failure to design and implement these changes would result in structural misalignment post-acquisition and reduced acquisition benefits.

The capabilities to implement an absorption or co-existence IT integration process are primarily technical. True, a co-existence process requires an understanding of how the acquisition's IT resources leverage its business capabilities. In contrast, understanding the business implications is critical for implementing a best of breed process to enhance the acquirer's IT-based processes.

In addition to the selection capability required to support a successful co-existence integration process, a best of breed integration process requires both political and organization change capabilities. Essentially, an IT enhancement mechanism is an IT-based business transformation (Henningson, 2012). Without political and organization change capabilities, the top management team would not give the IT integration team a mandate to identify and transfer

more efficient and/or effective IT-based business processes from the acquisition to the acquirer's SBUs.

IT renewal in combination with IT re-invention is a path-breaking and explorative process (Karim and Mitchell 2000). A maximum challenge scenario occurs when the acquisition is to renew the corporate strategy for the whole MBO. This requires the development of a new corporate IT platform tailored to a post-acquisition organization that does not yet exist. The platform project is exacerbated by time pressure from the market to realize business benefits (Mehta & Hirschheim, 2006) and by governmental authorities to achieve joint reporting and control procedures (Johnston & Yetton, 1996).

A moderate renewal challenge involves the transformation of the strategy for an existing SBU within the acquirer. This is an explorative process exacerbated by time pressure and requires both political and organization change capabilities. Without such capabilities, the acquirer would seek to exploit existing IT resources and, thereby, end up in a functionally misaligned state (Henningsson & Carlsson, 2011).

- Proposition 4a: Absorption and Co-existence IT integration processes require only technical implementation capabilities.
- Proposition 4b: Best of Breed and Renewal IT integration processes require both technical implementation capabilities, and political and organization change capabilities.

2.3.2 *Pre-acquisition IT conditions*

Early research on post-acquisition IT integration attributed problems with IT integration to IT issues being considered only after the acquisition deal had been finalized (McKiernan and Merali 1995; Weber and Pliskin 1996). This research concluded that IT intense acquirers should avoid technically incompatible acquisitions. Later research downplayed the role of technical compatibility, but corroborated the earlier conclusion that the success of IT integration projects is contingent on the initial IT conditions (Mehta and Hirschheim, 2007; Wijnhoven et al., 2006). Both Wijnhoven et al. (2006) and Henningsson and Carlsson (2011) highlight the need for IT resources that enable a growth strategy. Mehta and Hirschheim (2007) and Henningsson and

Carlsson (2011) find that, due to the time pressure, acquirers are motivated to use pre-existing IT resources rather than rebuild IT resources to improve post-acquisition performance.

We propose that pre-acquisition business and IT alignment is a critical pre-condition for IT-based value creation in acquisitions. If the acquirer is misaligned, the time to align business and IT strategies is measured in years. It cannot be adjusted during the acquisition process. We are unable to think of a process by which, or identify a real world example of, an acquirer in low alignment pre-acquisition that is transformed into high alignment post-acquisition. The exception is a best of breed process where the successful implementation of an IT enhancement mechanism leads to improved functional alignment. However, this would involve only an incremental improvement to functional alignment.

- Proposition 5: IT-based value creation post-acquisition is contingent on pre-acquisition business and IT structural and functional alignment.

2.4 A growth by acquisition strategy

In a growth-by-acquisition strategy, the acquirer must sustain IT-based value creation over a series of acquisitions. Below we explore how IT deployment capabilities increase or decline over a series of acquisitions. The critical question is whether changes in capabilities are random, or follow either a successful or unsuccessful trajectory.

2.4.1 IT integration capabilities

In a growth-by-acquisition strategy, the post-acquisition IT conditions and implementation capabilities are the pre-acquisition IT conditions and capabilities for the next acquisition. Two mechanisms affect an acquirer's IT integration capability from one acquisition to the next. One is that business and IT misalignment erodes implementation capability. The other mechanism is learning-by-doing from additional acquisitions.

First, the analysis above identifies post-acquisition business and IT alignment as a moderating condition for IT-based value creation. For the serial acquirer, any misalignment post-acquisition would quickly accumulate across acquisitions. This would both reduce post-acquisition performance and inhibit value capture in subsequent acquisitions.

Second, learning improves selection and implementation capabilities (Henningsson, 2012). Henningsson identifies learning effects across multiple acquisitions. He finds that the learning-performance curve is U-shaped. An acquirer with limited acquisition experience risks incorrectly generalizing previous experiences and performing below a novice acquirer. This could involve the selection of a previously successful IT absorption process in a situation where it is inappropriate.

- Proposition 6: In a growth by acquisition strategy, the post-acquisition IT conditions, and IT selection and implementation capabilities are the pre-acquisition IT conditions and capabilities for the next acquisition.

2.4.2 Scalable IT resources

Frequently, a growth-by-acquisition strategy increases the relative cost of IT resources (Mitra 2005). While growth leads to economies of scale in IT operations, growing organizations frequently spend relatively more on total IT resources. If the IT resources are not aligned with the dynamic growth strategy, the increasing complexity with scale of the IT infrastructure increases costs for control, coordination and future development (Mitra 2005).

Acquirers that make investments in IT before a period of growth to improve the scalability of the IT infrastructure, improve their ability to accommodate the required changes with a minimum of time, effort and cost (Mitra, 2005). Research outside the acquisition context has shown that organizational flexibility to adjust IT resources varies significantly. This affects how organizations develop (Sambamurthy et al. 2003).

Scalable IT resources have flat or declining cost structures that enable the acquirer to employ the IT integration mechanisms without dramatically increased IT costs. In general, the scalability of IT resources is a function of modularity, connectivity and standardization (Bhatt et al. 2010). Corporate IT platforms that do not meet these requirements, including, highly customized platforms, using non-standard software, experience escalating complexity-related costs as an organization makes acquisitions and increases in size (Mitra 2005). Therefore, building a scalable platform is a necessary component of a successful growth-by-acquisition strategy.

- Proposition 7: A successful growth-by-acquisition strategy is contingent on a scalable IT infrastructure.

2.5 A model of IT-based value creation in serial acquisitions

Figure 2 integrates the seven propositions above to show how they affect post-acquisition IT-based value creation. Here, these propositions are partitioned into three subsets, comprising capabilities (Propositions 1, 3 and 4), alignment (Propositions 2, 5 and 6) and infrastructure scalability (Proposition 7). First, successful acquisitions are contingent on the acquirer's capabilities to select (Proposition 3) and implement (Proposition 4) the appropriate IT integration process to deliver the expected post-acquisition benefits (Proposition 1). Second, serial acquires must have high pre-acquisition business and IT alignment (Proposition 2), high post-acquisition alignment (Proposition 5) and sustain this pattern across acquisitions (Proposition 6). Third, serial acquirers must build scalable IT infrastructures (Proposition 7).

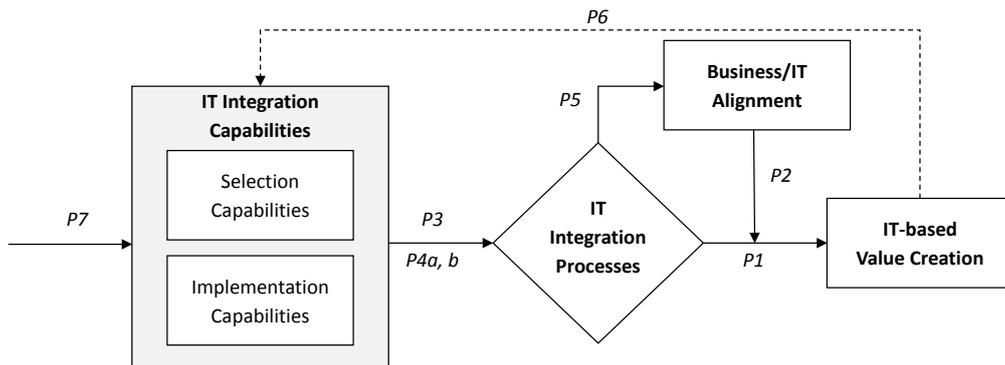


Figure 2. IT-based Value Creation in Serial Acquisitions.

The first sub-set of propositions, the acquirer's IT integration capabilities, is specific and unique to acquisitions. They are not general IT management capabilities that are typically owned by successful organizations. They, therefore, must be developed to deliver post-acquisition IT integration. Developing these capabilities takes both time and experience.

The second sub-set of propositions, business and IT alignment, are the subject of an extensive literature in IT. Surveys report that alignment is still a major challenge for CIOs. It is therefore a major risk for acquires.

The third sub-set, a scalable infrastructure, is a major technical challenge. Current generation ERP platforms are designed to satisfy Proposition 7. However, older ERP platforms would typically not satisfy this proposition and constitute a major threat to a successful acquisition.

3 Method

This study adopts a positivist case study approach (Yin 1994; Dubé and Paré 2003) to examine the model presented in Figure 2 and the seven propositions developed above. With our focus on theory building in the under-researched domain of post-acquisition IT integration, qualitative case analysis was considered to be an appropriate approach (c.f. Mohr 1982; Yin 1994). The case setting supports the examination of how theoretical constructs from the resource-based theory of strategy translate to a new application area (George and Bennett 2004).

We extend the Dubé and Paré (2003) and Eisenhardt (1989) case methodology, to analyze post-acquisition IT integration as part of a growth by acquisition program. Case analysis is conducted to test the model and propositions presented in Figure 2. Following Dubé and Paré, the case evidence was also interrogated for new insights that extend the theory developed here

3.1 Research context and case selection

The empirical results presented below are based on the experience of an international industry group. TES adopted a new strategy to transform itself from a diversified regional conglomerate to a global industry group focused on polymer technologies. Specifically, we followed the transformation of the industrial hose business unit established in 1996 until 2011.

TES was a division of Trelleborg AB. In 2011, Trelleborg was a global industry group with 21,000 employees in 44 countries and annual sales of €3.4 billion. TES had 6,000 employees spread over 30 countries and sales of €1.1 billion. Its head office was co-located with Trelleborg AB in the small city of Trelleborg, in the south of Sweden.

Two principle characteristics made the organization a suitable empirical setting for our research. One was that TES adopted a growth by acquisition strategy that required IT integration to fully

realize the business benefits. Between 1996 and 2011, TES made 33 acquisitions. The other reason was that TES's parent Trelleborg AB was a successful acquirer, frequently being able to efficiently realize the potential benefits from its acquisitions.

Investigating all of TES' 33 acquisitions in the period covered by this study was infeasible. Instead, we decided to focus on two acquisitions by TES that represent key characteristics of the seven propositions in Figure 2. The two cases were selected in collaboration with senior management, who provided access to the business units.

The acquisition program at TES is treated here as the overall case study. The two acquisitions are treated as sub-cases. The sub-cases were theoretically sampled (c.f. Eisenhardt, 1989) to show how TES evolved from an inexperienced to a successful acquirer defined in terms of delivering post-acquisition IT integration. As shown in Table 1, Kléber was acquired at the beginning of the growth by acquisition strategy in 1996. Dynaflex was acquired ten years later by which time TES had become a successful acquirer.

Table 1. Overview of empirical cases

Unit of Study	Acquisition date	Price	Head office	Unit Employees	Unit sales	
TES			Trelleborg, Sweden	6,000 (2011)	€3 bn	
	Kléber	1996	€40 M	Clermont-Ferrand, France	750 (1996)	€700 M
	Dynaflex	2006	€15 M	Sancheville, France	50 (2006)	€20 M

3.2 Data collection and data analysis

Interviews were the primary method of data collection. The initial interviews covered a broad agenda, including general management, strategy, organisational learning, and IT integration, to identify relevant initial conditions, states, events and transformations during the growth by acquisition program. Concepts related to the resource-based theory were part of this framework because of its generally recognised importance in the acquisition literature (Zollo and Singh 2004) and to explain value from IT resources (Wade & Hulland, 2004).

Interviews were wide-ranging and conversational to facilitate the collection of information to contribute to both theory development and future data collection (Eisenhardt, 1989). They were

recorded and transcribed. Interviewees were selected based on their ability to provide information on how managerial, strategic and IT factors interacted in the integration.

Additional data sources (Table 2) were used to complement the interviews and to triangulate findings. Sensitive documents, including due diligence reports and other strategic documents, were studied at the respective organisations’ premises. Following Yin (1994), Table 3 summarises the measures taken to ensure reliability and validity throughout the study.

Data analysis commenced immediately after the first round of interviews was completed and continued iteratively throughout the research project. The analysis followed the congruence method of George and Bennet (2004) in which the process of theoretical generalization begins with a theory and then investigates the ability of the theory to explain an outcome in a specific case. Drawing on Strauss and Corbin (1990), a technique similar to systematic categorization was employed, with a priori categories based on the extant literature.

Table 2. Overview of Empirical Data

Case	Interviewees (#)	Additional data
Acquisition program	CIO (2), Head of Business Development, Analyst Business Development (2)	Four feedback sessions, annual and periodic reports, visits to headquarters, group discussions, acquisition press releases, industry analyst reports, and information from financial databases.
Kléber	Business area CIO (2), Operations manager (2), Sales manager, Plant manager, IT architect, IT developer	Visits to business area headquarters, plant, logistic centre and warehouse, project plans, internal communication, financial reports, investment requests, system architecture blueprints, systems documentation, IT infrastructure chart, user guides.
Dynaflex	Business area CIO, Operations manager, IT architect (2), Systems integrator (2)	Visits to business area headquarter, plant and warehouse, project plans, internal communication, architecture blueprints, systems documentation, IT infrastructure chart, user guides.

Table 3. Research Reliability and Validity (based on Yin, 1994)

Reliability	Validity
<u>Case study protocols</u> - List of acquisitions - Organisation charts with potential informants - Interview guide with areas of interest - Strategy to allow for new information - Strategies for different informant competences - Risk areas with potential personal interests <u>Case study database</u> - Audio recording, transcriptions - Project documentation - Field notes with potential alternatives - Outcomes of reviews and informal discussions	<u>Multiple sources of evidence</u> - See Table 2. <u>Establishing chain of evidence</u> - Extended case stories with extensive use of quotes - Key findings of knowledge and learning mechanism linked to specific quotes <u>Review of case drafts</u> - Draft case stories were shared with employees of Trelleborg. Feedback corrected minor misconceptions of how processes unfolded, but supported our conception of IT-based value realization.

Second phase coding was made by events and states, representing the combination of coding categories. Following protocols based on Saldaña (2009) and Guest and MacQueen (2008), the three researchers coded as a group. Consistency in categorization was achieved by comparing each passage with passages already coded with the proposed category. Based on event series, extensive case stories were written and shared with interviewees for verification.

4 TES acquisition program

Here we present a brief description of TES and its acquisition program. By developing structural, functional and dynamic alignment of IT resources to the business strategies underpinning the acquisition program, and building diagnostic and implementation capabilities, TES improved IT-based value creation in its acquisitions.

The case highlights the need to regard multiple acquisitions as components of larger acquisition programs, in which decisions are taken both for each specific acquisition and for the program of acquisitions as a whole. The case also shows how the four post-acquisition IT integration processes are dependent on different organizational capabilities to maximize post-acquisition IT-based value creation.

4.1 Building scale-based businesses

In the mid 1990s, TES was a Nordic-based conglomerate. It adopted a new corporate strategy called ‘concentration and expansion’. Non-core businesses were divested to create a strong financial position. This funded a focused growth strategy in advanced polymer technologies.

At that time, the European market was being deregulated. Global market leadership within specific market segments was deemed essential for sustained competitiveness. The target for average growth in these areas was 8–10% annually over an economic cycle. From 1996 to 2011, organic growth was inadequate to meet that target and a growth by acquisitions program was implemented.

TES built a global business in industrial fluid systems and engineered solutions based on polymer materials. In its transition from a conglomerate to a focused global business, TES established a corporate layer of shared services to support TES' corporate level strategy. These corporate services included functions for materials procurement, research and development, business development, finance, marketing and communication. Production, sales, and logistics remained with the individual strategic business units (SBUs).

In addition, TES built IT resources aligned with the new strategy. IT resources supporting the corporate services were standardized at the corporate level. Within the SBUs, locally customized application portfolios were gradually replaced with applications to support global lines of business, establishing functional business and IT alignment.

Trelleborg adopted a strategic opportunistic approach to acquisitions, acquiring businesses as they became available. Frequently, the revitalization of a business unit's IT application portfolio occurred after the first acquisition in a market segment. Frequently, this led to a long post-acquisition IT integration phase for the first acquisition in a market. With the benefits of the learning from the first acquisition, subsequent acquisitions were implemented faster, using fewer resources.

Two acquisitions by TES are described below. Kléber was the first acquisition in a program to build global market leadership in industrial hose. In the acquisition of Kléber, the IT resources supporting Kléber were only fully integrated into TES ten years after the acquisition. To achieve this required a complete renewal of Kléber's IT resources. During that IT integration project, TES built the capabilities and improved the pre-conditions for the subsequent acquisition of Dynaflex, which was fully IT integrated within three months of its acquisition.

4.2 Acquiring Kléber

The acquisition of Kléber from the French Michelin group was the first acquisitions by TES in Trelleborg's concentration and expansion strategy. At the time of the Kléber acquisition, TES had been considering two options for its problematic hose business. One was to divest it

completely. The other was to invest in it to build a scale-based business with global market leadership in industrial hose.

“TES was at this time restructuring around its core businesses. It was not obvious that hose should be a part of the focus. TES’s hose business was... .. limited in scope and not profitable. Therefore, it was questionable whether it should be part of the core on the other hand,, it was obvious that the hose-market was fragmented and relatively unstable. Therefore, it was an attractive growth option with the right acquisition.” (PP, 051019)

The decision was made to transform the existing niche business in the hose industry to a scale-based, low cost business. Two factors made Kléber an attractive acquisition. One was the match between the product lines of the existing TES unit and Kléber. TES expected to capture economies of scale in production, sales and distribution. The other factor was that Kléber was underdeveloped, and presented a potential growth option for the Trelleborg Group. To realize these benefits, the existing TES niche hose business and Kléber were combined to form a new SBU called Trelleborg Industrial Hose (TIH).

“In terms of production, the two units... were very compatible Overlapping was also limited in geographical terms. Trelleborg was more Nordic. Kléber was more Continental, had a larger product range, and had a wider distribution network. Basically, the companies competed in the same market only in Germany. Kléber had strong market shares in some key countries. Kléber was not profitable due to lack of management support and investment. Michelin did not realize the potential of Kléber’s market position.” (TIH CFO).

TES had already implemented the organizational and IT changes required to benefit from the corporate layer of shared services in the hose business unit. However, with the pre-acquisition hose business in a strategic limbo, TES had not implemented a new application portfolio to support a global, scale-based hose business. Instead, the hose business was supported by a highly customized application portfolio, based on the ERP system Movex and developed to meet the specific local requirements of the niche player strategy of the existing hose business.

To gain control of Kléber, TES appointed a Swedish management team with instructions to replace Kléber’s French suppliers with the Swedish suppliers to the pre-acquisition TES hose business. Kléber’s IT systems, based on the in-house developed ERP system Bergounix, was to be ported onto the Movex portfolio used by TES to improve structural alignment when group functions, including finance, were implemented.

Two years after the acquisition, the Swedish team had failed to develop the business capabilities to run a scale-based, low cost hose business. The team had also failed to port the Kléber systems

onto the Movex-based system used by TES' hose business. The cost was unacceptable and the proposed action was cancelled.

“At the end of 1998, they came to the conclusion that it would take about 1000 working days to develop the new Movex system to support the Kléber development and integration It was too much. It couldn't be justified with future savings. Growing with this IT setup would have increased costs dramatically over time.” (TIH Operations manager).

A French management team replaced the Swedish team. Critically, the new team included an Operations manager, who had been responsible for the IT integration of an acquisition in his former organization. TIH was restructured to capture scale advantages. Production was moved from Trelleborg to the former Kléber site to capture production-based economies of scale. Single functional heads were appointed in a centralized cost-focused structure, and IT was standardized and centralized on the Kléber Bergounix portfolio to reduce distribution and IT operating costs.

Pre-acquisition national companies were converted into sales offices against strong local protests. Strategically, the reorganization started in the South of Europe, leaving the Trelleborg production unit until last. When the new operation model had proven effective, the group management (based in Trelleborg) approved the final step, the integration of the Trelleborg unit.

Initially, the French team developed Bergounix to support a scale-based business, improving IT and business functional alignment. However, structural alignment was limited because several functions of the Bergounix system overlapped with TES' corporate platform and required constant synchronization. Importantly, the in-house developed Bergounix did not support the TIH dynamic expansion strategy.

“The Bergounix platform was working fine and was appreciated since it was really built around our organization. But we also had to use an old Movex version for finance and reporting, as part of the Trelleborg group. And Bergounix was built to run here and now. It was not a system with which you could travel comfortably.” (TIH operations manager)

Finally, the Bergounix system, which was expensive to maintain and extend, was replaced by a standard Movex-based system.

“We re-drew the organizational chart completely ... But in 2001, we had real problems with the infrastructure and IT. We were halfway through the porting of former Trelleborg units to the Bergounix platform, when we realized that we were creating future problems by doing this. The Bergounix system was 10 years old. It was hard to support and didn't fit with other systems in TES. When we tried to add modules, products or sites, it was complex and expensive... .. We decided to compare Movex to the other standard packages available... .. The idea was to check if Movex was competitive with the others... ..

The ERP system itself was not what was interesting for us, that was the basics. It should just support our business at a low cost. What we were interested in was, for example, the supply-chain module that we are implementing right now. But that we couldn't have done without first putting the whole business unit into the same Movex application." (TIH operations manager)

The second attempt to integrate the IT of Kléber and Trelleborg adopted a different strategy. Importantly, for the TES expansion strategy, the TIH employees understood the Movex system, and how it could be extended. To the extent that consultants were used, it was for specific technical tasks and not for project management or requirement specification.

"We wanted to keep all our knowledge inside. I spent at least two days a week in the same room as the consultants, building the system together with them. In this way, I would fully understand the system and have the whole picture. I would say that we changed the way to look at IT in the company, as I'm also responsible for the production sites. We now (in 2005) have some people here with more knowledge than the consultants." (TIH Operations manager).

Moving to the new Movex platform established structural, functional and dynamic alignment in TIH. In 2005, the last former Trelleborg units (including the production facility in Trelleborg, Sweden) were ported onto the new Movex platform. Finally, the IT strategy was aligned with the new, expanding, scale-based low cost business strategy. New business and IT capabilities had been developed. Costs were reduced and TIH was profitable.

"Since 1999, we have improved every year. In 1999, three years after the acquisition, we lost €3 million. The ROA [Return On Assets] was negative, while for the Trelleborg Group the standard was 15%. We improved every year after that, and last year we had a ROA of 17%. The profit was more than €7 million. Turnover was €100 million. It's a major improvement, and a great result... .. This year [2006], the ROA will increase to 21% or 22 %" (TIH Operations manager).

Importantly, the decisions taken on post-acquisition IT integration were not made with only the current operations of TIH in mind. The decision to move to the new Movex platform could not be justified by the Kléber acquisition on its own, but it was justified as an important part of the acquisition-based growth strategy to create a scale-based hose business. The importance of a scalable IT platform was a painful lesson learned from the ten year post-acquisition IT integration project. However, as will be explained in the Dynaflex acquisition below, in the integration project TES built an aligned IT platform and the organizational capabilities required to deliver IT-based value creation from subsequent acquisitions.

4.3 Acquiring Dynaflex

During the restructuring of the IT operations of TIH, acquisitions in the hose business were suspended. TES did not make a second acquisition in the hose industry until the new Movex

system was in place and aligned with the business strategy. Then, TES acquired the niche-player Dynaflex from Manuli, an Italian industry group. By then, TIH had become highly profitable with a low cost position in the market for industrial hose. While both TIH and Dynaflex had production operations located in France, their core customers and products were independent.

“Within the hose business, there are two different markets. Hydraulic hoses are for high-pressure applications and composite hoses are for low and medium pressure. Dynaflex had focused on the former and TIH on the latter... .. After the acquisition, they became major distributors of each other’s products. They did not manufacture competing products.” (TIH Systems Integrator).

TIH manufactured and serviced a wide range of hose products. Dynaflex specialized in the production of hydraulic hoses for the oil and petro-chemical industries, and enjoyed a reputation for technological leadership. Therefore, the acquisition of Dynaflex was primarily a scope-based, related product acquisition. TIH enhanced its product palette, becoming a distributor of Dynaflex products. The strategic intent was to grow the Dynaflex product line, for example, by launching its products in new markets where TIH already held a strong market position.

“The Trelleborg group does not acquire a company that is already successful. Rather, it prefers to see future potential and either develop the company or introduce its products to new countries. For example, in this case, we launched Dynaflex products in the U.K., where Dynaflex previously had not had any customers.” (TIH Operations manager)

In planning the acquisition, IT issues were not high on the agenda.

“One week before the deal was signed, our sales manager came to me saying that we were about to acquire Dynaflex. I asked him: ‘What about IT? Do we need to support them on day one, or how do we do it?’ ‘Good question, I’ll get back to you on that!’, he replied. A few hours later, he came back saying that they had decided that the seller would keep the IT alive for six months. By then, we had to have ported them over to our platform. ‘Could we do that? How should we do that?’ He asked (TIH Operations manager).

At the same time as the Dynaflex acquisition, TIH was finishing its rollout of the new Movex-based system for its hose business. TES was now in high structural, functional and dynamic alignment with respect to its hose business.. The Movex IT integration team was confident that the time frame for the Dynaflex integration would be sufficient, based on the state of the application portfolio and their experiences with implementing the Movex application in various locations within TIH. In addition, the project scope for integrating Dynaflex was simplified, when, after a two-day visit to the site, the decision was taken to keep Dynaflex’s existing production-related IT.

“For each process, we investigated: ‘How are they doing it today?’ and ‘How should it be done in the future?’. For most processes, we could decide that the latter was the standard Movex way. Later Isabelle and I went through all the processes in detail, investigating if it really was possible to work in that way.” (TIH Systems Integrator).

“The TIH sales department did not want to implement a complex standard package. Dynaflex was a small, efficient and flexible business. If we had implemented the full Movex package, we would have destroyed that flexibility.” (TIH Operations manager).

TIH made sure to include the production system in the deal, negotiating data access and support from Manuli for data migration. Documentation from the Kléber integration was used to define the need for data access. Having already implemented the Movex system in many other sites to complete the integration of Kléber, the TIH IT group was able to use that capability to integrate the Dynaflex business.

“We had been the same team for 3-4 years. We knew what worked. That was why they asked me. I had actually left for France, but, since I could be operational immediately, they wanted me. The same was true for Isabelle. We could both use our experience to deliver on-time.” (TIH Systems integrator)

The next step was for TIH programmers to redeploy the processes from the Movex system. As the Movex system was already implemented in many other sites, the programmers were able to reuse existing processes.

“We didn’t really need to program that much. We used existing processes that we had created for previous projects. I think that we created only one or two new processes. ... We needed to investigate the databases and move the items to Movex. ... When you do this kind of redeployment, the databases are where you normally spend the most time. You have to go through which products, customers, etc you want to transfer and make sure that you transfer them in the right way.” (TIH Systems Integrator).

The initial conditions for the Dynaflex acquisition were very different from those for the Kléber acquisition. Pre-acquisition, TIH was in structural, functional and dynamic business and IT alignment. In addition, during the challenging IT integration of Kléber, TIH’s IT operation had built both diagnostic and implementation capabilities that ensured post-acquisition IT-based value creation.

“There is no way we could have integrated Dynaflex in the same way in 1996. It would have taken much longer than the six months we had to complete integration, and even after that we wouldn’t have got the same value out of the acquisition. Dynaflex would have remained an individual unit supported by IT that didn’t fit with how it operated. We would have no insight into Dynaflex, and limited ability to develop the business. And we would probably have made many mistakes. In 1996, we didn’t know how to do this. We were relying on external consultants, and they didn’t fully understand our business.” (TIH Operations manager).

Consequently, in three months, sales and distribution IT were ported onto TIH’s new Movex-based ERP system. With its financial systems integrated with the TES platform, Dynaflex became integrated into the general TES IT platform for financial control and monitoring. Full business and IT integration was achieved quickly and successfully. The fast integration made it

possible for TIH to immediately follow up with a production-based acquisition in China. By 2011, TES had successfully integrated five acquisitions into the global hose business.

5 Case analysis

The analysis begins the process of validating the seven propositions presented in Figure 2. The analysis is structured by partitioning the seven propositions into three sub-sets. These are capabilities (Propositions 1, 3 and 4a 4b), alignment (Propositions 2, 5 and 6) and infrastructure scalability (Proposition 7). The validation is summarized in Table 4.

Table 4. Validation of propositions

Proposition	Kléber	Dynaflex
<i>P1: Each of the four IT integration processes leverages different primary acquisition benefits.</i>	IT renewal to leverage business transformation, IT absorption to leverage economies of scale	IT co-existence to leverage economies of scope, IT absorption to leverage economies of scale
<i>P2: IT-based value creation in acquisitions by MBOs is contingent on functional, structural and dynamic post-acquisition business and IT alignment.</i>	When TIH had established post-acquisition alignment profit increased and future growth was enabled	TES management explicitly avoided fully redeploying TES' pre-acquisition IT resource with the motivation of not reducing functional alignment.
<i>P3: Effective IT selection capabilities identify the optimal mix of acquisition IT integration processes and the IT resources to which access must be secured.</i>	TES attempted an IT absorption process but realized an IT renewal process was required to transform the organization.	TES successfully diagnosed the unique IT resources and secured post-acquisition access.
<i>P4a: Absorption and Co-existence IT integration processes require only technical implementation capabilities. P4b: Best-of- Breed and Renewal IT integration processes require both technical implementation capabilities, and political and organizational change capabilities.</i>	4b: The renewal process was associated with a politically sensitive IT-led organizational restructuring in which power balances shifted, work processes were redefined and employees were replaced/made redundant.	4a. The IT integration team described the data transfer as the most difficult part of the IT integration.
<i>P5: IT-based value creation post-acquisition is contingent on pre-acquisition business and IT structural and functional alignment.</i>	TIH eventually arrived at an aligned post-acquisition state, but it took ten years before the organization could take full advantage of the business benefits of the acquisition.	With pre-acquisition alignment, TIH could expand and extend existing IT resources.
<i>P6: In a growth by acquisition strategy, the post-acquisition IT conditions, and IT selection and implementation capabilities are the pre-acquisition IT conditions and capabilities for the next acquisition.</i>	While successfully integrating Kléber on its second attempt by using an IT-renewal process, TES developed integration capabilities, a scalable platform, and high business and IT strategic alignment.	Had Dynaflex been acquired two years after the acquisition of Kléber, TES would have been in mis-alignment and lacking the required integration capabilities and scalable IT platform.
<i>P7: A successful growth-by-acquisition strategy is contingent on a scalable IT infrastructure.</i>	The highly customized Movex platform used by TES pre-acquisition in the Kléber case and the in-house developed platform used by Kléber required changes that could not be cost justified by the potential benefits of integrating the	The new standardized Movex platform provided the critical flat cost structure when expanded to support a similar process and extended to support new processes, including those involved in the Dynaflex acquisition.

Kléber was an acquisition by TES to build a scale-based business in the hose industry. Two factors made Kléber an attractive acquisition. One was the match between the product lines of the existing TES unit and Kléber. TES expected to capture the potential economies of scale to be realized in production, sales and distribution. The other was that Kléber was underdeveloped. It was a potential growth option for the Trelleborg Group. The existing TES niche hose business and Kléber were combined to form a new SBU called Trelleborg Industrial Hose (TIH).

When acquiring Dynaflex, TES made another acquisition in the hose industry, acquiring the small niche-player from Manuli, an Italian industry group. TIH and Dynaflex had production operations located close to each other in central France. However, their core customers and products were independent. TIH manufactured and serviced a wide range of hose products; Dynaflex specialized in the production of hydraulic hoses for the oil and petro-chemical industries, and enjoyed a reputation for technological leadership. Dynaflex was a scope-based, related product acquisition. TIH enhanced its product palette and became both an internal supplier to, and buyer of, Dynaflex products. The strategic intent was to grow Dynaflex's business, for example, by launching its products in new markets where TIH already had a strong market position.

The processes to deliver high post-acquisition IT integration in the two acquisitions described here were very different. It took ten years to integrate Kléber into TES by an IT renewal process. In contrast, it took only three months to integrate Dynaflex with a partial IT co-existence process. As a function of existing capabilities, alignment and IT infrastructure scalability, the two acquisitions followed very different paths to post-acquisition IT-based value creation. In the Kléber acquisition, TES did not possess the capabilities, the alignment or the scalable IT infrastructure required to effectively deliver post-acquisition IT integration. However, while integrating Kléber, TES did develop the necessary conditions for IT-based value creation in the later acquisition of Dynaflex. These included both the conditions that lowered the post-

acquisition IT integration challenge by enabling a path-dependent IT integration process, and the capabilities to manage the co-existence IT integration process.

5.1 Capabilities: Propositions 1, 3, 4a and 4b

The first set of propositions, the acquirer's IT integration capabilities, describes the capabilities required for successful IT-based value creation by selecting and implementing the appropriate IT integration process to realize the expected business benefits. These IT integration capabilities are not general IT management capabilities that are typically owned by successful organizations. Therefore, they must be developed specifically to deliver post-acquisition IT integration.

Supporting *Proposition 1*, different IT integration processes had to be employed to realize the different IT-based business benefits in the Kléber and Dynaflex acquisitions. In the integration of Kléber, an IT renewal process activated an IT re-invention mechanism that enabled a business transformation. In the integration of Dynaflex, a partial co-existence integration process, that included both IT expansion and IT extension mechanisms, activated economies of scale and scope. The implementation of different IT integration mechanisms involves fundamentally different tasks, requiring different IT integration capabilities. Therefore, different IT integration capabilities were required to develop IT integration post-acquisition in the Kléber and Dynaflex acquisitions.

The TES case also supports *Proposition 3*. A major difference in the IT integration of Kléber and Dynaflex was the acquirer's ability to select the appropriate optimal mix of acquisition IT integration processes and the IT resources to which access had to be secured. In the integration of Kléber, TES incorrectly assumed that an IT absorption process and IT expansion mechanism would realize IT-based business benefits. The consequence was a two-year detour.

Only after realizing the inappropriate selection of an absorption process, could the required work of re-developing IT resources start. Fortunately for TES, Kléber was run pre-acquisition as an independent company with stand-alone IT infrastructure. Otherwise, TES would probably have been involved in a long and expensive transition contract with the vendor. In the case of

Dynaflex, there was an integration deadline of six months, after which the vendor would no longer provide IT support. However, by that time, TES had the capability to select the appropriate IT integration process and secure access to the critical IT resources to integrate the acquisition within the timeframe.

In support of *Proposition 4*, the IT renewal process required to create IT-based value in the Kléber acquisition included an organizational transformation project. In contrast, the partial IT co-existence process for integrating Dynaflex was described simply as an IT technical challenge. The TES staff responsible for restructuring the Dynaflex IT infrastructure, turning off the functions to be provided by the TES corporate IT platform, described the project's most significant challenge as the migration of data.

After the IT integration, staff at both TES and Dynaflex worked essentially in the same way as before. In contrast, the Kléber integration became an IT-based business transformation where national IT departments were closed down, local business practices and processes were replaced with global standards, employees were transferred or made redundant, and local management responsibilities were downgraded. In the final phase of the To manage the Kléber implementation, a careful roll-out strategy was designed in which a proven track-record was developed before integrating and transforming the most politically powerful part of the organization as the last stage in the roll-out.

5.2 Alignment: Propositions 2, 5, 6

The second sub-set of propositions, business and IT alignment, is the subject of an extensive literature, in which business and IT alignment are positively correlated with organizational performance. It follows that IT integration projects that bring business and IT strategies into post-acquisition misalign would not fully realize the potential value of the combined organizations. Figure 2 models business and IT alignment as a moderating variable for post-acquisition IT-based value creation.

Proposition 2: When integrating Kléber, TES attempted to leverage an IT expansion mechanism within an IT absorption integration process. TES discovered that this would lead to post-acquisition mis-alignment and not fully realize the expected IT-based business benefits. Redeploying the TES pre-acquisition IT resources would lead to lower functional alignment, while redeploying Kléber's pre-acquisition IT resources would lead to decreased structural alignment.

Instead, an IT re-invention mechanism within a renewal integration process was required. The subsequent IT renewal process developed IT resources that were functionally and structurally aligned with both the TES corporate and new SBU business strategies. For Dynaflex, high functional and structural alignment was achieved by deconstructing the Dynaflex pre-acquisition set of IT resources to retain its functionally unique IT resources. TES management explicitly did not fully deploy the TES pre-acquisition IT resources to the Dynaflex acquisition, and so avoided reducing the new SBU business and IT functional alignment, and consequently its business flexibility.

Proposition 5 is based on the logic that the three path-dependent IT integration processes would not transform a mis-aligned acquirer into an aligned integrated organization post-acquisition. Path-dependent IT absorption, co-existence and best-of-breed integration processes sustain the existing state of alignment in the acquirer because the integration processes redeploy existing business and IT resources. To build an aligned integrated organization post-acquisition, a mis-aligned acquirer must use the IT re-invention mechanism within a path-breaking, renewal integration project.

Proposition 5 is supported by both the Kléber and Dynaflex acquisitions. In the Kléber case, the initial post-acquisition strategy sustained a state with low alignment and poor performance. To improve alignment and performance in the Kléber acquisition, a path-breaking IT renewal process was required and implemented subsequently. In contrast, the integration of Dynaflex sustained a state of high alignment and increased performance because, pre-acquisition, the renewal process had delivered high alignment.

A similar set of arguments supports Proposition 6. Had Dynaflex been acquired two years after the acquisition of Kléber, TES would have been in mis-alignment and lacking the required integration capabilities and scalable IT platform. The acquisition would not have been quickly and successfully completed because the initial conditions for the Dynaflex acquisition would have been the post- Kléber acquisition mis-alignment, weak integration capabilities and the existing incompatible Movex and Bergounix platforms.

While successfully integrating Kléber on its second attempt by using an IT-renewal process, TES developed integration capabilities, a scalable platform, and high business and IT strategic alignment. So, when Dynaflex was acquired, a path-dependent co-existence integration process was not only quick and successful, but it also sustained the same initial conditions, high alignment and high integration capabilities, to support the subsequent successful acquisitions in China and France.

5.3 Scalability: Proposition 7

A scalable IT infrastructure is a prerequisite for a successful growth-by-acquisition strategy in the third sub-set of propositions. Building a scalable infrastructure to replace a non-scalable IT infrastructure is a major technical challenge. Scalable IT resources have flat or declining cost structures that enable acquirers to employ any one or combination of the four IT integration mechanisms to realize the expected business benefits from acquisitions.

The post-acquisition effects of the differences in scalability between the three platforms described in the Kléber and Dynaflex cases support *Proposition 7*. First, the highly customized Movex platform used by TES pre-acquisition in the Kléber case required changes that could not be cost justified by the potential benefits of integrating the IT in the two business units. Second, while the in-house, Kléber-developed Bergounix platform could be extended to support the existing business in TES, its functionality could not be extended cost effectively. This was an obstacle to future growth and the major reason why the existing platform was not extended in the Kléber re-newel project.

Finally, the new standardized Movex platform provided the critical flat cost structure when expanded to support a similar process and extended to support new processes, including those involved in the Dynaflex acquisition. This platform also enabled TES to continue its growth by acquisition strategy with joint ventures in China and France. While the new platform could not have been justified by the benefits of a single acquisition, it was justified by and critical to the TES growth-by-acquisition program.

6 Discussion

We develop seven propositions that affect post-acquisition performance when acquiring a business unit (See Figure 2). These propositions show that IT-based value creation in serial acquisitions is contingent on the acquirer's acquisition IT integration capabilities, pre- and post-acquisition business and IT strategic alignment, and a scalable IT infrastructure. Propositions developed from the theoretical framework are supported by the analysis of case data.

First, successful acquisitions are contingent on the acquirer's capabilities to select (Proposition 3) and implement (Proposition 4) the appropriate IT integration process to deliver the expected post-acquisition benefits (Proposition 1). These three IT integration capabilities are specific and unique to acquisitions. They are not general IT management capabilities that are typically owned by successful organizations. Instead, they must be developed specifically to deliver post-acquisition IT integration.

The analysis of resource redeployment in the four IT integration processes, absorption, co-existence, best-of-breed and renewal, reveals that the four processes are fundamentally different in the integration mechanisms that create value. An acquisition team must understand these differences to select (Proposition 3) the appropriate integration process to deliver the expected business benefit (Proposition 1).

In addition, the four mechanisms that create value involve different degrees of resource exploitation (absorption and co-existence) and exploration (best-of-breed and renewal). They require very different implementation capabilities (Proposition 4a and 4b). Regardless of

previous acquisition experience, most organizations would have the capability to implement an absorption integration process. However, as the implementation challenge becomes increasingly complex, because it involves explorative integration processes and/or several processes in combination, post-acquisition performance is contingent on the presence of high quality, experienced IT implementation capability.

Second, serial acquirers must have high pre-acquisition business and IT alignment (Proposition 2), high post-acquisition alignment (Proposition 5) and sustain this pattern across acquisitions (Proposition 6). This second sub-set of propositions is the subject of an extensive literature in IT. Surveys report that alignment is a major challenge for CIOs. Sustaining alignment is a major risk for serial acquirers. Whereas the acquisition IT integration capabilities are to some degree distinct for each IT integration process, alignment is a common mediating variable for IT-based value creation in all acquisition processes, with the exception of a full renewal process.

Third, serial acquirers must build scalable IT infrastructures (Proposition 7). A scalable IT infrastructure has a flat or decreasing cost per unit when new production units, processes and users are added to the IT infrastructure. This is a major technical challenge. An IT infrastructure with an increasing cost per unit could be sustainable for one-off acquisition, but would soon become unsustainable in sequential acquisitions. Some current generation ERP platforms are designed to satisfy Proposition 7. However, most older ERP platforms would not satisfy this proposition and constitute a major threat to a successful growth-by-acquisition strategy.

6.1 Limitations and validity threats

The major limitation of this analysis is its restriction to the acquisition of a business unit by a multi-business organization. It does not include the acquisition of a multi-business organization by another multi-business organization, or the merger between two such organizations. Both are much more complex events than the acquisition of a business unit that is analyzed in this exploratory research study.

The major validity threat to the findings reported here is whether the relative sizes of the acquisitions could explain the differences between the Dynaflex and Kléber acquisitions. Dynaflex had sales of € 20m pa and employed 50 people. Kléber had sales of € 60m pa and employed 750 people. Against an explanation based on scale, both acquisitions were small compared with the size of Trelleborg, which had sales of € 3,4b pa and 21,000 employees when completing the Dynaflex acquisition in 2004. In addition, both Dynaflex and Kléber were single line of business units. However, size should be investigated in subsequent research.

6.2 Implications for theory

This paper makes two theoretical contributions to the area of post-acquisition IT integration. First, Propositions 1-7 integrate and extend existing findings to explain successful post-acquisition IT integration to realize acquisition business benefits. The model in Figure 2 adds to the extant literature on post-acquisition IT integration by linking the pre-acquisition IT integration challenge to acquirers' post-acquisition IT integration capability.

The extant literature presents the acquirer's capability to manage post-acquisition IT integration as a one-dimensional continuum that does not recognize the heterogeneity of the post-acquisition IT integration challenge (Stylianou et al., 1998; Robbins & Stylianou, 1999; Tanriverdi & Uysal, 2011; Henningsson, 2012). We show that this view is too simplistic. In contrast, the model we develop is not a linear additive function of a number of factors. Instead, it is a complex interdependent model of specific acquisition-based IT capabilities, pre- and post-acquisition business and IT strategic alignment states, and technical infrastructure requirements. The model in Figure 2 is aligned to the stream of research on the post-acquisition IT integration challenge that concludes that the four IT integration processes, absorption, co-existence, best-of-breed and renewal, are fundamentally different IT integration challenges (Johnston & Yetton, 1996; Wijnhoven et al., 2006; Mehta & Hirschheim, 2006; Henningsson & Carlsson, 2011).

Second, we further add to the extant literature on post-acquisition IT integration by explaining recursive effects on IT-based value creation between acquisitions in growth-by-acquisition programs. With the exception of Henningsson (2012), the extant literature analyses post-

acquisition IT integration defines the individual acquisition as the unit of analysis. However, as depicted in Figure 2, sequential acquisitions have potentially both generative and degenerative effects on the acquirer's post-acquisition IT integration capability over time. This explains why, as noted by Wijnhoven et al. (2006) and Henningsson (2012), investments to improve business and IT alignment, and IT infrastructure scalability, that are not justifiable by the individual acquisition are critical for the execution of a growth-by-acquisition strategy.

6.3 Implications for practice

Figure 2 has three important implications for practice. First, it explains why many one-off acquisitions have a high probability of failure. Given the cost of and elapsed time to develop the three acquisition specific IT capabilities, their development could not be justified for a one-off acquisition. Therefore, in the absence of the required capabilities, such acquisitions are high risk and have a high failure rate. Regardless of previous acquisition experience, most organizations would have the capability to implement an absorption integration process. However, as the implementation challenge becomes increasingly complex, post-acquisition performance is contingent on the presence of high quality, experienced IT implementation capability.

Second, the causes of failure cannot be resolved in the short run, for example, after announcing an acquisition. The causes include the absence of selection and implementation capabilities, misalignment between business and IT strategies and a non-scalable IT platform. In this situation, the practical challenge becomes to identify and reduce risks. An important challenge for IT management is the management of the expectations of the IT organization's limited ability to deliver post-acquisition IT integration.

Therefore, third, adopting a growth-by-acquisition strategy has a high failure rate in the short term. However, in the long term, once the prior conditions have been resolved, the strategy has a high probability of success. Beginning as an inexperienced acquirer without the required acquisition specific IT capabilities and scalable infrastructure, the question is: Can the acquirer learn fast enough to satisfy the required sub-sets before failure discredits the strategy? Of

course, for those that do over time satisfy the sub-sets, successful serial acquisitions become normal. Not surprisingly, 'successful' serial acquirers undertake 60% of acquisitions.

7 References

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