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Abstract

IT carve-out projects are complex and cost-intensive components of M&A transactions. Existing research sheds little light on the determinants of IT carve-out project complexity and/or its effects on divestor performance. Instead, research has focused on the post-acquisition IT integration project and acquirer performance. This paper presents the first divestor-centric model of IT transactions from the divestor to the acquirer when a Business Unit in a Multi-Business Organization (MBO) is carved out and integrated into another MBO. The model explains how divestor business and IT alignment pre-conditions contribute to increased IT carve-out project complexity. Such complexity increases IT carve-out project time to physical IT separation and creates IT stranded assets, which decrease post-divestment business, IT alignment and divestor performance. The current recommended strategy of adopting transitional service agreements (TSAs) to handle IT carve-out complexity is compared with two new proactive strategies derived from the model. TSA-based strategies restrict the divestor from both decommissioning IT stranded assets and reconfiguring its IT assets to support its new post-divestment business strategy. The two new strategies address IT carve-out complexity without incurring the negative effects from adopting TSAs.

Keywords

Carve-out, Integration, IT alignment, Divestment, IT stranded assets, M&A, Multi-Business Organisations, Theory building

1 INTRODUCTION

Mergers and acquisitions (M&As) are critical components of organisational strategies. Between 2000 and 2020, more than 927,500 such transactions were announced worldwide with a value of over US$69 trillion (Thomson ONE 2021). The transactions take various forms, including mergers between Fortune 500 organisations (Hu et al. 2020), industrial-age companies that acquire tech start-ups to boost digital innovation (Hanelt et al. 2021) and divestments of business units (BU) by multi-business organisations (MBO) and their acquisitions by other MBOs (Yetton et al. 2013).

However, post-acquisition IT integration projects of the third type compared with the other two types are subject to a unique IT-based contingency: *The IT carve-out project for the transacted BU from the divestor's IT landscape*. The IT carve-out project is one of two IT projects that contribute to the successful divestment of a BU by an MBO and its integration into another MBO. The other is the post-acquisition IT integration project by the acquirer.

There is extensive research literature on post-acquisition IT integration strategies and their effects on acquirer performance. See, for example, the special issue in *EJIS* (Hedman and Sarker 2015) and the review by Henningsson et al. (2018). In this acquirer-centric view, the IT carve-out project is treated as a contextual condition that affects the options for value-creation through post-acquisition IT integration (e.g. Hsu and Chen 2006; Robbins and Stylianou 1999; Stylianou et al. 1996; Tanriverdi and Uysal 2015).

In comparison, there is limited research on the IT carve-out project and its effects on divestor performance, where the IT carve-out project is defined as *the separation of divestor IT assets to enable the transfer of the required IT assets to the acquirer and the retirement of the surplus IT assets that are no longer required by the divestor* (Leimeister et al. 2008). This gap in IT M&A research is important for three reasons. First, there are many M&As of this type. Between 2000 and 2020, they consistently accounted for around 30% of M&A projects (Thomson ONE 2021). Second, IT carve-out projects are expensive. Ratzer et al. (2014) report that more than half of the surveyed IT carve-out projects required a budget of more than €25 million. Third, IT carve-out projects are notoriously problematic. IT carve-out projects frequently overrun timelines and budgets (Brauer 2006; Müller 2006).

In part, this is because IT carve-out projects are frequently under-planned and underestimated (Fontaine 2012). Before Legal Day 1, when the transaction project starts, divestors typically do not know which IT assets must be transferred to the acquirers. The sales contract typically refers to the transfer of the relevant IT assets to keep the transacted BU operational (Leimeister et al. 2008). So, prior to Legal Day 1, divestors cannot investigate where the relevant IT assets are located in their IT landscapes, or plan for the challenges of separating them from the IT assets that they need to retain or begin to retire the surplus IT assets that are no longer required. In addition, while IT carve-out projects occur frequently within the M&A industry, they are often an infrequent and novel event for a divestor (Fontaine 2012).

To illustrate the IT carve-out challenge, consider the divestment of a Medical Device manufacturing BU from its parent company (Desai 2018). The IT carve-out project involved the IT enablement of 5000 people spread over 17 sites in 129 cities globally. The IT application portfolio included over 189 applications with eight mission-critical Enterprise Resource Planning (ERP) platforms, all of which were deeply connected internally to the parent company and externally with customers, suppliers and partners. A hastily established team investigated each IT component to ensure that, at the handover, no data would be lost, no processes disrupted and no security standards compromised. Reflecting on the aggressive schedule with key decision makers absent or in transition, the team leader commented that "… the challenges faced in a carve-out are far more significant and difficult than anything you face in a typical M&A situation! … This is not a task for the fainthearted" (Desai 2018).

For these reasons, the IT carve-out project is challenging for a divestor, particularly when the project is large and complex (Leimeister et al. 2012). Even for highly complex IT carve-out projects, transaction contracts typically specify timeframes of only three to six months within which the BU is to become operational as part of the acquirer's organisation (Dudek et al. 2020). Because "a separation of complex systems or processes does not usually fit into the timeline of a typical M&A transaction" (Dudek et al. 2020, p. 1), extensive practice literature promotes the use of *Transitional Service Agreements* (TSAs).

TSAs are formal agreements between divestors and acquirers that specify how divestors continue to provide IT support to transacted BUs until they can be supported by the acquirers' own IT assets (see, for example, Booth and Geller 2008; Deloitte 2016; Luu and Thomsen 2019). TSAs enable the BUs to be operationally viable at the date set in the contract, while extending *Physical IT Separation* 6-18 months into the future (van Es et al. 2014). TSAs are costly and put restrictions on the divestor's IT operations (EY 2019), but enable the rapid synergy realisation expected by the market (Toppenberg et al. 2015).

In this paper, we complement the acquirer-centric research on IT issues in organisational transactions by focusing on the IT carve-out project and divestor performance when BUs are transacted between MBOs. Treating post-acquisition IT integration as the context, this paper develops a divestor-centric model of IT transactions to explain how pre-divestment IT conditions cause IT carve-out project complexity and the effects of that complexity on divestor performance.

To do this, we adopt alignment theory as our theoretical framework. Within the post-acquisition IT integration literature, alignment theory is used to explain how post-acquisition IT integration strategies enable or constrain acquisition value creation (see review by Henningsson et al. 2018). Here, we extend this stream of research to analyse the pre-divestment conditions for the IT carve-out project and their effects on divestor performance.

Drawing on the observations in the practice literature about the roles in M&As of IT carve-out complexity, time constraints, IT stranded assets and the use of TSAs, this paper addresses two research questions: **How do divestor IT alignment preconditions affect IT carve-out project complexity?** and **How does IT carve-out project complexity affect post-divestment performance?** The answers to the two questions constitute a basis for predicting IT carve-out project complexity and better managing the negative effects of the complexity when an MBO divests a BU to another MBO.

To develop the explanatory model (Gregor 2006) to address the two research questions, we adopt Weber's (2012) three guidelines for theory development: (1) define the constructs, (2) specify the relationships among the constructs and (3) define the boundaries of the theory. Within this framework, Section 2 reviews the related research and defines the constructs. Section 3 specifies the relationships among the constructs and grounds them in practice through illustrations from a previously published case study. Section 4 discusses the implications for theory and practice, the boundary conditions for the model and the research limitations.

In doing this, the paper contributes to the literature on IT challenges in M&As in three ways: (1) defining two new constructs, IT carve-out project complexity and IT stranded assets; (2) describing the combined effect of IT carve-out project complexity and transaction project time constraints on the use of TSAs and the creation of IT stranded assets; and (3) explaining how post-divestment IT alignment preconditions threaten divestor performance.

2 RELATED RESEARCH

The divestment to acquisition process involves the transfer of organisational resources and capabilities from one organisation to another. This process consists of two components. One is the divestor carve-out project, which is defined here as *the separation of divested resources from the divesting MBO's remaining resources* (Böhm 2015; Leimeister et al. 2008). The other component is the post-acquisition integration project, which is defined as *the combination of acquired resources with the acquirer's existing resources* (Capron et al. 1998). In both processes, IT challenges are critical.

This review focuses on the IT carve-out project, treating post-acquisition IT integration as the context. The related research is presented in four sections. First, the typical timeline for an IT carve-out project described. Second, IT carve-out project complexity is defined. Third, the threat to post-divestment performance contingent on IT stranded assets is explored. Fourth, an IT alignment model is selected to provide an overarching theoretical framework through which to examine the two research questions.

2.1 The IT carve-out project

A large body of practice literature with established normative frameworks exists for how to resolve IT carve-out challenges. Prior to signing the contract (referred to as *Day Zero*), the *deal-making* phase typically takes four to six months (Harroch et al. 2018). Because of commercial sensitivity, IT executives are rarely involved in these processes until close to contract (Ratzer et al. 2014).

As illustrated in Figure 1, on average four months after Day Zero (Gillingham and Stimpson 2008), the divestor must deliver *Legal Day 1* readiness. This includes closing the books, creating a legally independent entity and transferring the business ownership to the acquirer (Thomas et al. 2017). If required, regulatory authorities need to approve the transaction during this phase (Broyd and Storch 2006; Buchta et al. 2009; Leimeister et al. 2012; Leimeister et al. 2008). To achieve Legal Day 1 readiness from an IT perspective requires that the accounting and reporting systems are operational when ownership is transferred (Leimeister et al. 2008). Prior to Legal Day 1, the divestor and acquirer are restricted by anti-trust concerns, competition and data privacy law from making detailed plans and starting to transfer the IT assets (Gillingham and Stimpson 2008).

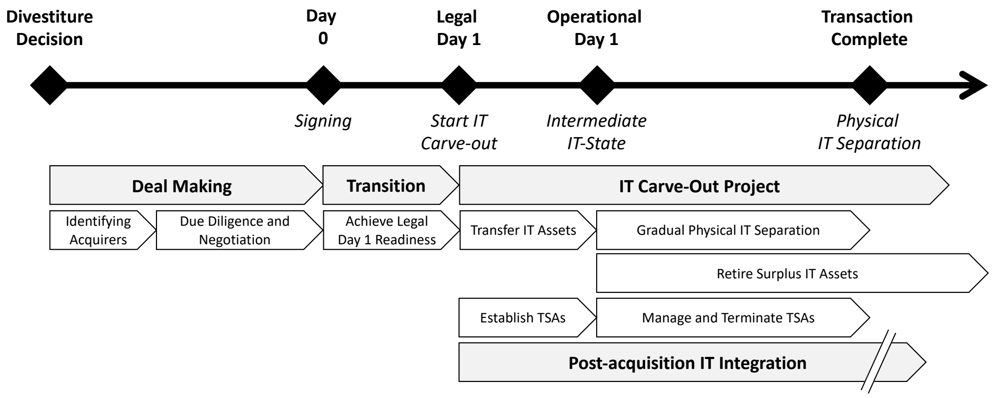

Figure 1. Phases and Milestones for a Divestment

Operational Day 1 (Thomas et al. 2017) is the date defined in the transaction contract after which the transacted business should operate as part of the acquirer's organisation. Typically, this date occurs between three and nine months after Legal Day 1 (Gillingham and Stimpson 2008). Operational Day 1 could also be the end of the transaction, *Transaction Complete*, and define the completion of *Physical IT Separation*.

However, the timeframe in the contract is frequently too tight to execute the required IT carve-out. In that case, Operational Day 1 represents an operationally viable *intermediate IT-state* in which the provision of IT services by the divestor is formally enabled by TSAs. These deliver the temporary provision of specific functions to the divested business by the divestor, including access to historic financial data, until these functions are transferred to, and provided by, the acquirer (Gillingham and Stimpson 2008). TSAs are attractive because they make an earlier Operational Day 1 possible and provide reliable IT support until Physical IT Separation (Leimeister et al. 2012; Leimeister et al. 2008). This intermediary IT state is then successively decommissioned by physically separating the IT assets (Leimeister et al. 2008).

In addition to transferring IT systems to the acquirer, the divestor needs to retire any IT assets that are surplus to requirements—for example, data that are no longer relevant, IT systems with no alternative use and inappropriate IT license agreements (Leimeister et al. 2008). This "clean-up" to support business and IT realignment post-divestment consists of two sets of assets. One refers to the IT assets not required by both the divestor and acquirer post-Operational Day 1. The other form refers to the assets required to support the divested business unit via the TSAs. Many of these assets become surplus to requirement post-physical IT separation. Drawing on the strategy literature, both forms of surplus IT assets are treated here as *IT stranded assets* (see Section 2.3 below).

2.2 *IT carve-out project complexity*

The IT carve-out project is defined as "the physical separation of the business unit's IT infrastructure, applications, and data, from the divesting company" (Anselmi and Autry 2010, p. 21). In the context of an organisational transaction from one MBO to another, the IT carve-out project consists of the separation of the IT assets supporting the business unit to be divested, including IT infrastructure, IT applications and data*,* to enable (a) the transfer of IT assets to the acquirer and (b) the retirement of any IT assets that are surplus to the acquirer's requirements.

Stimulated by early observations that IT is potentially a challenge in divestments (Applegate et al. 2007; Markus 2001), an emergent research stream describes the critical issues for IT carve-out projects and how divestors resolve them. In this stream (Table 1), Leimeister et al. (2012; 2008) explore the challenges and success factors of IT carve-out projects. Böhm et al. (2010) and Fähling et al. (2010) describe an "ideal world" in which IT carve-out projects are not problematic. Fontaine (2012) develops a process model of the IT carve-out project. Du and Tanriverdi (2010; 2014) investigate the role and impact of TSAs in the IT carve-out of spin-off divestments. Pflügler et al. (2015) develop a maturity framework to assess an organisation's pre-divestment IT carve-out capability.

Table 1. Themes in Research on IT Carve-out

Theme	Focus area	Associated publications	Key findings
Complexity	IT carve-out process	Fontaine (2012) Leimeister et al. (2008)	Identification of phases and critical milestones in the IT carve-out project. Distinction between logical (an intermediate state) and physical (final) IT separation.
	IT carve-out preconditions	Böhm et al. (2010) Fähling et al. (2010) Pflügler et al. (2015)	A set of conditions that lowers the IT carve-out challenge and its associated costs (the 'ideal world' IT carve-out). Identification of pre-divestment IT carve-out capability maturity.
	IT carve-out operations	Leimeister et al. (2012; 2008)	The available options for separating the IT of a BU from the parent organisation.
Time constraints	Temporal pacing	Fontaine (2012) Leimeister et al. (2012; 2008)	IT carve-out projects typically work within a divestment contract that specifies hard deadlines for the separation from the divesting parent organisation.
	Interim states	Leimeister et al. (2008)	The use of TSAs to cope with impossible demands.
Impact	Effects on divested unit	Du and Tanriverdi (2010; 2014)	The parent organisation's ability to enable TSAs impacts the performance in spin-off divestments.
	Divestor effects	Tanriverdi and Du (2009)	Increased risk of IT non-compliance in divestor compared to non-divesting organisations.
	Target IT quality	Robbins and Stylianou (1999) Stylianou et al. (1996)	Target IT assets (data, applications and infrastructure) form the input to the acquirer's IT integration project.
	Timelines for IT carve-out projects	Böhm et al. (2011) Henningsson and Kettinger (2016)	Divestor IT carve-out project is run in parallel with acquirer IT integration project, with carve-out delays adversely affecting the integration project.

In addition, the IT carve-out project is investigated as the context in the post-acquisition IT integration literature. For example, target IT quality (Robbins and Stylianou 1999; Stylianou et al. 1996) and divestor capability to complete the IT carve-out (Henningsson and Kettinger 2016) are identified as risks to the IT integration project (Henningsson et al. 2018).

The research presented in Table 1 identifies two critical issues in IT carve-out projects: IT carve-out project complexity and time constraints. IT carve-out projects are frequently complex, accounting for more than 50 % of the overall carve-out cost (Leimeister et al. 2008). This complexity explains why carve-out projects are frequently unable to cope with the time constraints set in the sales contract: the time available between Legal Day 1 and Operational Day 1 in Figure 1. With the carve-out and post-acquisition IT integration projects running in parallel rather than sequentially (Figure 1), the need to deliver Operational Day 1 readiness creates time constraints on the carve-out project that are resolved with TSAs.

Drawing on the general IT project complexity literature, we distinguish between two forms of complexity: *structural complexity* and *dynamic complexity* (Brady and Davies 2014; Gregory and Piccinini 2013; Lee and Xia 2002; Xia and Lee 2005). Structural complexity is "a function of the number of project components and the form and strength of the relationships among [them]" (Lee and Xia 2002, p. 3). A project with many interdependent tasks is more complex than a project with few and/or independent tasks (Gregory and Piccinini 2013). Dynamic complexity refers to "complexity due to changes in business and technological environments" (Lee and Xia 2002, p. 3). Uncertainty and ambiguity are characteristics of dynamic complexity, where planning for, and anticipating the progress of, the IT project is difficult (Gregory and Piccinini 2013). Formally, we conceptualise IT carve-out project complexity as the combination of the structural complexity resulting from the number of, and interdependencies among, the tasks and stakeholders involved in the IT carve-out project, and the dynamic complexity resulting from the uncertainty of the tasks included in IT carve-out projects.

In IT carve-out projects, structural complexity is found in the activities of separating relevant IT assets from the divestor's IT environment and transferring them to the acquirer (Leimeister et al. 2012; Leimeister et al. 2008). Generally, the more integrated a BU is pre-divestment, the more tasks to execute in the IT carve-out (Leimeister et al. 2012; Leimeister et al. 2008). A unique aspect of dynamic complexity in IT carve-out projects is that the transfer contract governing the IT carve-out project typically includes only a general reference to the transfer of IT assets to maintain operations (Leimeister et al. 2012; Leimeister et al. 2008). Consequently, there is high ambiguity in what must be accomplished, leaving the divestor and acquirer to negotiate the actions.

In addition, the task of separation often includes separating data and processes within legacy IT systems that were not designed or built to enable future decoupling. While flexibility from modularised IT systems (Benitez et al. 2018) could help to enable separation, high modularity is typically not a characteristic of large MBOs' legacy systems (Ciborra et al. 2000). Trying to modify tightly coupled IT infrastructure typically leads to unanticipated effects, which contributes to dynamic complexity (Ciborra et al. 2000).

Table 2 reports three ways in which operations contribute to IT carve-out complexity. A *data extract* in which the divestor makes available only a cleansed data set would represent a relatively limited level of complexity as it entails no (or little) development work or modification to other technical components[1]. *System transfers* and *system replications* typically include the additional issues of transfer and establishment of new legal contracts and the management of system interdependencies in the divestor's IT landscape. In addition, because transfers and replications address legacy systems that can be poorly documented and with low modularity, these operations are exploratory with a high degree of uncertainty.

Table 2. IT Carve-out Operations

IT Carve-out Operation	Description	Associated complexity
Data extract	Access to the application is disabled, and the entity to be divested receives a cleansed data extract.	Structural: Few technical and organisational components involved. Dynamic: Predictable tasks with little uncertainty and few dependencies.
System transfer	When the divested BU is the sole user of a system, the complete system, together with a cleansed data set, is ported to the acquirer's platform together with the setup of a new legal license or outsourcing contract.	Structural: Consideration of a wider range of interdependent components and stakeholders with divergent interests. Dynamic: Uncertain ripple effects across legacy applications and exploratory separation of tightly coupled systems.
System replication	When the divested BU shares a system with the parent organisation, a clone of the system is replicated on the acquirer's platform together with a subset of cleansed data and a new legal license or outsourcing contract.	Structural: Consideration of a wider range of interdependent components and stakeholders with divergent interests. Dynamic: Uncertainty in how to clone legacy system and potentially conflicting interests in the recreation of dependencies post-separation.

In addition, IT carve-out projects are subject to time constraints[2]. Time constraints for completing the IT carve-out and IT integration are endemic to IT transaction projects because the acquirer cannot realise its acquisition business benefits until the acquired BU is integrated into the acquirer's IT support systems (Hanelt et al. 2021). The importance of time pressure from internal and external stakeholders to complete the IT integration project is a strong empirical finding in the acquisition IT integration literature (Henningsson et al. 2018). Because of the consequences to the project of any delay, divestors have limited degrees of freedom within which to manage IT carve-out complexity. This is particularly critical because IT carve-out complexity is frequently substantially underestimated (Leimeister et al. 2008). Consequently, time constraints intensify the challenges contingent on IT carve-out complexity, driving up IT carve-out costs (Leimeister et al. 2012). Applegate et al. (2007) report an extreme example in which the initial costs were underestimated by a factor of twenty. Long-term, the effect on divestor performance from IT stranded assets could pose a severe challenge to the divestment business case.

[1] A data migration sometimes involves substantial work to clean, reformat and merge data from one source with another. Analytically distinguishing between the IT carve-out and IT integration projects, we do see that the task of data merger falls within the IT integration project. The task of the IT carve-out project is to make the raw data available.

[2] In the general project complexity literature, some authors include *pacing* as a dimension of project complexity. Here, we treat pacing as an emergent property of complexity and time constraints combined.

2.3 IT stranded assets

A major motivation for divestments is the premium that acquirers typically pay to gain control over a business, justified by the expected synergistic effects when the divested assets are combined with the acquirer's pre-existing businesses. If the acquirer has a 'parenting advantage' (Du 2015) over the divestor, transacting a BU has a theoretical value potential, disregarding the costs of carving out the BU from the divestor and integrating it into the acquirer. Because of the acquisition premium, divestments have an average net positive impact on the divestor. However, there are large variations around the expected value, with stranded assets identified as major threats to divestor value creation (Cristo and Falk 2006). Stranded assets are assets in the divesting organisations for which *there are no or reduced uses after the divestment, but with a retained stranded cost*. Frequently, stranded assets are found in support functions and in shared assets with a fixed cost structure (Joy 2018). Divestors commonly take three years to recover operational margins because of the need to reconfigure stranded assets within the organisation (Fubini et al. 2013).

While well-established in the strategy literature, with a particular recent focus on stranded assets in the energy industry due to climate change and the growth in sustainable energy (see, for example, Cresap et al. 2020), there is no body of knowledge on IT stranded assets in the IT research literature. In contrast, the IT practice literature documents the cost of IT stranded assets as a major threat to a successful divestment strategy. For example, the Cresap et al. (2020) report by KPMG observes that the divestor is often left with "a business and technology landscape in disarray with orphaned assets left to be managed".

Cresap et al. (2020) estimate that stranded costs represent 2-4% of the transaction value for the divestor, with IT usually representing 50% or more of the costs (see also Leimeister et al., 2008). In the energy industry, there were $US2-4 billion of IT stranded costs at risk from divestments in the third quarter of 2019. Accepting Cresap et al.'s estimate of stranded costs as a percentage of transaction value and their assumption that stranded IT costs are 50% of total stranded costs, then total IT stranded costs in all divestments across industries between 2000 and 2020 would have been in the range of $US0.69-1.38 trillion (see Thomson ONE, 2021).

The KPMG report by Cresap et al. (2020) concludes that "The primary question [that] should always be asked [is] how can you ensure that your business is not stranded out at sea by IT?" Critically, the report comments that IT stranded assets require the longest lead time of all stranded asset costs. IT stranded assets are therefore a potential major threat to value-creating corporate divestments.

2.4 Business and IT alignment in MBOs

The issue of IT alignment is based in a contingency view that there is not a single best IT strategy. Instead, business and IT strategies complement each other (see reviews by Benbya et al. 2019; Coltman et al. 2015; Queiroz 2017). The general findings show that complimentary business and IT strategies have a positive effect on organisational performance (see the meta-analysis by Gerow et al. 2014).

Here, the conceptualisations of business and IT alignment in the literature are briefly reviewed to position our theory development within the general IT alignment literature. The review shows that, while the focal object in this paper is BU IT assets to be carved out of an MBO and transferred to another MBO, the dominant analytical framework in the IT alignment literature is business and IT alignment and its effects on performance at an overall organisational level of analysis. Six exceptions that adopt a BU level of analysis are examined.

Secondly, we explain the adoption of the Reynolds and Yetton (2015) model of IT alignment that develops a BU-centric model of IT alignment in MBOs upon which we draw to develop the arguments supporting the effects of pre-divestment alignment conditions on IT carve-out project complexity and of IT stranded assets on post-divestment IT misalignment and performance.

2.4.1 Perspectives of IT alignment

In their "curation" of IT alignment research in *Management Information Systems Quarterly* (*MISQ*), Benbya et al. (2019) organise the IT alignment literature published in *MISQ*. One of their findings is that of the 29 articles on IT alignment published in *MISQ*, 22 articles exclusively adopt an organisation level of analysis. Only four articles investigate IT alignment at the BU level of analysis. Similarly, all 78 studies in Gerow et al.'s (2014) meta-analysis measure IT alignment and performance at the organisational level of analysis. Consistent with these observations, the dominant theoretical frameworks explaining IT alignment assume a single, overall organisational level of analysis (see Appendix A). This includes the highly influential Strategic Alignment Model (SAM) by Henderson and Venkatraman (1993).

The focus on the organisational level of analysis has restricted the literature from appropriately accounting for specific issues of IT alignment in MBOs. In MBOs, decisions must be made about IT investments that enable the creation of value within BUs and at the corporate level of organisations (Quaadgras et al. 2014). The link between the BU and the corporate level is the principle focus of research on IT alignment that adopts the BU level of analysis.

In Benbya et al.'s (2019) curation, three of the four identified papers that adopt a BU level of analysis are relevant as a basis for addressing the additional alignment issues in MBOs: Brown and Magill (1994) and Reich and Benbasat (1996; 2000). The fourth article, Slaughter et al. (2006), develops concept maps to show how to align software processes to strategy and is not relevant here. Beyond *MISQ*, three additional studies that adopt a BU-centric alignment frameworks are Brown and Magill (1998), Weill and Ross (2004) and Ross et al. (2006).

In this stream of alignment research that addresses the link between the BU and the corporate, Brown and Magill (1998, p. 176) extend their earlier research (1994) to theorise about how conflicts between corporate management and BU management arise over the control of IT resources and how they can be resolved. Ross et al. (2006) report that the relationships addressed theoretically by Brown and Magill (1998) are among the most challenging of IT decisions because of the tensions between investing in firm-wide corporate IT platforms and in localised BU-specific IT-applications. This builds on and extends Weill and Ross (2004), who documented that BUs build market-specific IT applications to enable local strategic objectives, by assigning the BUs decision rights (ownership) over specific IT assets.

These observations identify the importance of the allocation of decision rights over IT assets across BU and corporate levels (Brown and Magill 1998; Ross et al. 2006; Weill and Ross 2004). Following this insight, we build on recent developments in the strategic IT alignment literature (Fonstad and Subramani, 2009; Reynolds and Yetton, 2015; Querioz et al., 2020) that reflect the multi-level heterogeneity of IT strategy in MBOs. Specifically, we adopt the Reynolds and Yetton (2015) model of alignment as the analytical framework, because it is the only alignment model that supports the analysis of IT alignment and its effects on performance at the corporate and the BU levels in MBOs.

2.4.2 Functional and structural IT alignment in MBOs

The Reynolds and Yetton (2015) model (see Appendix A for the positioning relative to other major alignment frameworks) is based on the premise that MBOs develop business and IT strategies at the corporate level and individually for each BU. The corporate business strategy specifies how the organisation competes as a whole. Each individual BU business strategy specifies how the MBO competes in each line of business. BUs have distinct business strategies that reflect the differences in their market contexts. In MBOs, corporate and BU level strategies are complementary (Queiroz et al. 2020).

Reynolds and Yetton (2015) argue that IT alignment in MBOs must reflect the heterogenous nature of strategy in that organisational form (see Figure 2). At the corporate level, the corporate IT platform strategy enables the corporate business strategy, while at the BU level, the BU-specific IT application portfolio strategies enable each BU business strategy.

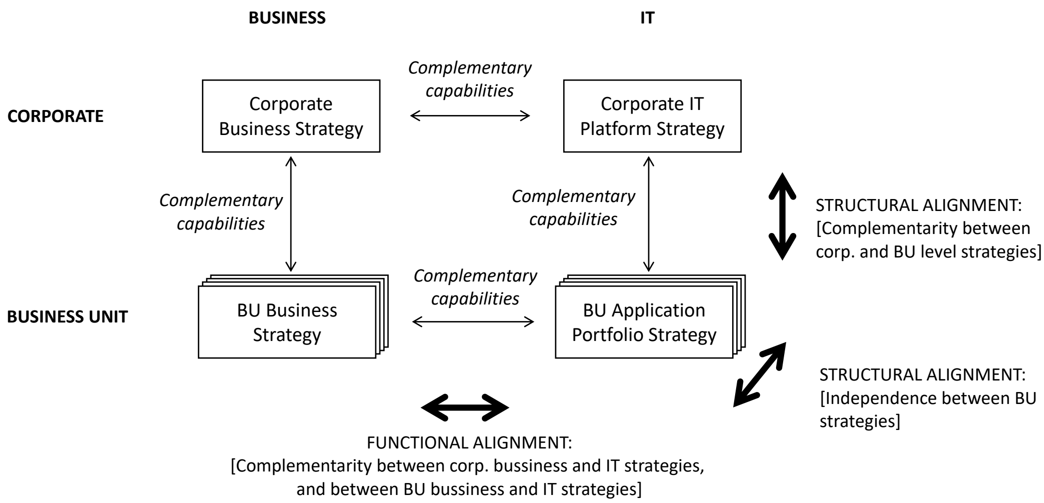

Figure 2. Business IT-alignment in MBOs (Reynolds and Yetton, 2015)

Adopting this relationship between corporate- and BU-level business and IT strategies, Reynolds and Yetton (2015) deconstruct the IT alignment construct into two components: *functional* and *structural alignment.* Functional alignment, also known as horizontal alignment (Chakravarthy and Henderson 2007), is defined as *how well IT capabilities enable business capabilities at the corporate level and within each BU* (Figure 2). Functional alignment creates unique BU and corporate level IT-based business capabilities.

These two forms of IT-based business capabilities are similar in form to the traditional alignment frameworks derived from the extensions to SAM (see Gerow et al. 2014), and thus consistent with how alignment is applied is studies such as Tiwana and Konsynski (2010). The dominant implicit or explicit theoretical framework is the resource-based view of the firm (see the conceptualization of IT strategy by Tallon et al. 2016; Tallon 2007).

Consistent with Reynolds and Yetton (2015), Queiroz et al. (2020) operationalise IT functional alignment to distinguish between IT capabilities that support corporate and BU level strategies. MBOs have high functional alignment at the corporate level when (a) the corporate IT platform has the capabilities required to enable the corporate strategy, (b) these capabilities are sufficiently developed to support the corporate strategy, (c) the potential of the platform is considered in corporate strategy decisions and (d) overall, the corporate IT platform meets the needs of the corporate strategy (see Queiroz et al. 2020). The BU is in high functional alignment when the BU application portfolio presents the same qualities relative to the BU business strategy. Conversely, misalignment increases monotonically as the above conditions are not fulfilled.

Reynolds and Yetton's (2015) second extension to the traditional IT alignment frameworks addresses the particular challenge within MBOs of coordinating across the corporate IT platform and the BUs' IT application portfolios (Queiroz et al. 2020; Reynolds and Yetton 2015; Ross et al. 2006). Corporate IT platforms enable cross-BU coordination to minimise duplication of IT resources, and BU IT portfolios maximise each BU's ability to compete in its own market (Reynolds and Yetton 2015).

In MBOs compared with single line businesses, developing IT-based capabilities at the corporate level and within each BU increases coordination requirements (Christensen 1998). This complexity is managed by creating a set of semi-autonomous BUs coordinated by the corporate function. The allocation of decision rights over IT resources determines structural alignment or misalignment. Structural alignment refers to *how well the allocation of IT decision rights across BUs and between each BU and the corporate level matches business strategic decision rights.* An organisation is in high structural alignment if (a) corporate and BU level business and IT strategies complement each other, and (b) at the BU level, there is independence between the BUs' individual business of IT strategies (Figure 2).

IT decision rights should mirror business decision rights, which may not be the case in practice (Wiedemann et al. 2020). Specifically, IT decision rights at the BU level are limited to the unique IT-based business processes related to how the BU competes in its own market. Decision rights over the IT assets that support business strategies shared across two or more BUs are allocated to the corporation. This addresses the critical tensions among BUs and between BUs and the corporate level over the assignment of IT decision rights that are discussed by Brown and Magill (1994; 1998) and by Weil and Ross (2004) and Ross et al. (2006). Misalignment occurs when BUs are allowed to decide about unique variations of what should be standardised corporate IT services (i.e., local customisations) to support corporate strategy, or when BUs are allowed to create application portfolios interdependent upon other BU application portfolios (i.e., shared applications at the BU level) (Reynolds and Yetton 2015).

2.4.3 Alignment and organisational performance

In the Reynolds and Yetton (2015) model, structural and functional alignment contribute to organisational performance in distinct ways. The positive effect of structural alignment on organisational performance is explained through organisational governance (Makadok 2010; Makadok 2011). Structural alignment reduces internal transaction costs (Reynolds and Yetton 2015; Williamson 1996) and agency coordination costs (Eisenhardt and Bourgeois 1988). An optimal structural configuration of IT decision leads to a governance structure that includes well-documented IT assets with natural owners located in the parts of the organisation enabled by the IT asset (Reynolds and Yetton 2015).

Conversely, structural misalignment creates poor governance conditions. Structural misalignment leads to negotiations and politics in decision-making that slow down and constrain decision-making at both corporate and BU levels (Reynolds and Yetton 2015). In structural misalignment, there are also no 'natural owners' overseeing the documentation of variations in the use of corporate IT services and BU-level shared application (Reynolds and Yetton 2015).

The value-creating logic of functional alignment is that the combination of business and IT capabilities in high functional alignment creates unique organisational competences (Makadok 2010; Makadok 2011). This drives organisational performance as measured by profit, sales, growth and market share compared to competitors (Powell and Dent-Micallef 1997; Queiroz et al. 2020). Therefore, improvements in functional alignment have positive effects on organisational performance (Queiroz et al. 2020).

Increases in IT functional alignment within BUs and at the corporate IT platform have distinct but mutually reinforcing effects on organisational performance. Therefore, increases in functional alignment at both corporate and BU levels has a *multiplier effect* on performance (Queiroz et al. 2020). Importantly, increases (or decreases) in functional alignment at the corporate level would have a multiplier effect on all BUs in the MBO (Queiroz et al. 2020). Therefore, even small changes at the corporate level have substantial impact on the performance of the MBO.

3 MODEL DEVELOPMENT

The review above presents the theoretical building blocks for the development of the explanatory model in Figure 3. Drawing on the building blocks (see Appendix B for construct definitions), the model consists of three components. First, drawing on the IT alignment literature in Section 2.4, Propositions 1a-1e address the first research question: *How do divestor IT alignment preconditions affect IT carve-out project complexity?*

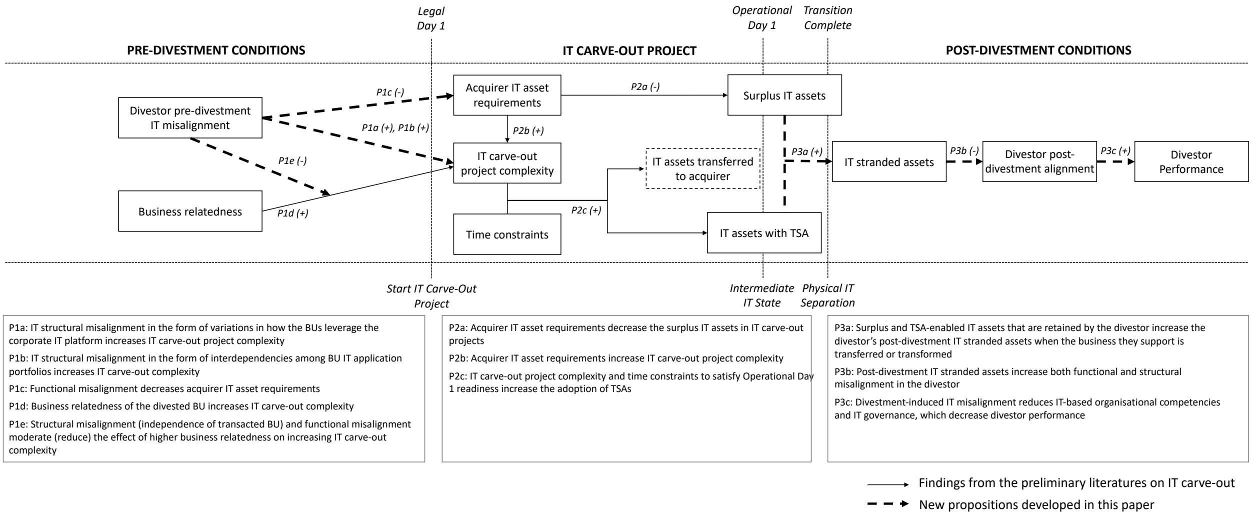

Figure 3. IT carve-out project complexity and post-divestment performance

Second, drawing on the emergent research and rich practice literature, three arrows in Figure 3 (Propositions 2a-2c) represent the relationships among IT carve-out project complexity, acquirer IT requirements and time constraints in the transaction project and the effects of those interactions on the creation of surplus IT assets, the IT asset transferred to the acquirer and the adoption of TSAs.

Third, the effects of IT carve-out project complexity on IT stranded assets post-divestment (Proposition 3a) and their effects on post-divestment IT alignment and performance (Propositions 3b and 3c) address the second research question: *How does IT carve-out project complexity affect post-divestment performance?*

The five novel relationships (P1a-c, P1e and P3a-c) that address the two research questions are represented in Figure 3 by bold dotted arrows. The solid arrows are previously described in the literature review (see Section 2).

To illustrate the propositions in practice, we draw on the previously published case narrative of the PSU divestment (Anonymous). The PSU BU was divested by ComputerServices and acquired by EurasiaTech[3], whose intent was to establish PSU as a new, independent BU, making minimal demands on EurasiaTech's existing IT assets. In the associated IT carve-out project, IT assets required by EurasiaTech were located in the carve-out BU's own IT application portfolio, other BUs' IT application portfolios, the corporate shared IT platform and in subsidiary businesses located in various countries, where they were subject to local regulatory requirements.

From the perspective of ComputerServices, the IT carve-out project faced two major challenges. One was PSU's pre-divestment shared use of IT assets with other BUs within ComputerServices. The second was that the corporate-level shared IT services within ComputerServices could be customised to PSU's foreign subsidiaries without formal approval and documentation.

[3] The names of all the companies and BUs in this case have been disguised.

Table 3 provides a brief overview of the case and Appendix C details the methodological considerations of the case analysis. While the case narrative was not originally constructed to be analysed within the theoretical framework adopted in this paper, the published narrative is sufficiently rich to ground the propositions in practice. The use of the case serves to make abstract arguments accessible to the reader and is intended to serve only as a face-validity test of the model (see Discussion for limitations).

Table 3. Case Overview

Divestor	ComputerServices was a global MBO with three BUs providing IT consulting, software design and development, IT outsourcing operations and product-related maintenance services. The last was the responsibility of the divested BU (PSU). ComputerServices served more than 10,000 customers in the private and public sector, employed 35,000 employees and had revenues of €4bn, which generated a loss of €100m in the year prior to PSU's sale to EurasiaTech. The ComputerServices BUs and regional subsidiaries enjoyed a high degree of autonomy to adjust their strategies to market needs. Each of the 35 country subsidiaries ran its own SAP ERP system to support the three BU subsidiaries, and customised the ERP system, including the sales and support system, to accommodate local requirements.
Acquirer	At the time of purchase, EurasiaTech was a joint venture between a European and an Asian technology company that supplied hardware. Before the acquisition, it was a major supplier to PSU.
Transaction rationale	ComputerServices decided to divest PSU to restore profitability. PSU, with 2,300 employees in 35 countries and €1bn in revenue, provided maintenance services for ComputerServices products operated at clients' sites, including infrastructure services and migration and lifecycle management. The prospect of PSU being shut down, sold to one of its competitors or established as a stand-alone company involved the risk to EurasiaTech that PSU would choose to work with another hardware supplier. Therefore, EurasiaTech's main rationale for its vertical acquisition of PSU was to secure market share.
Organisational transaction	The transacted BU was established as a joint venture with EurasiaTech acquiring a majority stake and decision rights over organisational and IT design.
IT carve-out	The PSU IT carve-out project was one of ten divestment workstreams. It was structured as five sub-projects: (1) IT Infrastructure; (2) IT Applications; (3) IT Contracts; (4) IT Organisation; and (5) Country Coordination. The IT carve-out workstream was initially staffed with 20 people, later increased to more than 50 people, making it a major cost component (approx. €20m) of the overall PSU carve-out project.
IT integration method	EurasiaTech established PSU as an independent SBU, with only minimal use of EurasiaTech's existing IT assets. PSU's IT was to co-exist with the IT of EurasiaTech's other BUs to preserve PSU's independence and because PSU had a unique business model that did not closely align with any of the business models of EurasiaTech's other BUs.

3.1 Pre-divestment IT alignment conditions and IT carve-out project complexity

IT alignment conditions (Reynolds and Yetton 2015) is one of three causes of IT carve-out project complexity in Figure 3. Both structural and functional alignment are relevant when considering IT carve-out complexity, as they directly impact the tasks needed for separating a BU from the divestor MBO. Additionally, structural and functional alignment moderate the effect of business relatedness—the degree to which a BU has been an integral as opposed to independent business in the MBO pre-divestment—on IT carve-out complexity.

3.1.1 IT structural misalignment and IT carve-out complexity

To examine the effect of IT structural misalignment on IT carve-out complexity, we begin by explaining the IT carve-out when a divestor is in high structural alignment. We then examine the consequences of a starting point with structural misalignment; first considering variations in how BUs leverage the corporate IT platform, and then dependencies between the transacted BU and other BUs' IT application portfolios.

Consider the hypothetical divestment of a BU in a high structural IT alignment context (see Appendix B) in which high IT alignment is contingent on two relationships (Figure 2 in Section 2.4). One is that each BU's relationship with the corporate IT platform is similar in form to, and independent of, the other BUs' relationships with the corporate IT platform (Brown and Magill 1998). That is, there are no BU-specific customisations or local variations to the corporate IT platform.

The other relationship is that the transacted BU has ownership (the decision rights) over its BU IT application portfolio. Specifically, the BU has no dependences between its IT assets and those located in other BU IT application portfolios. This is a formal theoretical definition of the "ideal world" described by Böhm et al. (2010) and Fähling et al. (2010) in which they argue that IT carve-out projects are not problematic.

When the transaction agreement is signed, there are two tasks. One is that the BU IT application portfolio is migrated through a system transfer operation and relocated to the acquirer (Gillingham and Stimpson 2008). The other task is to resolve the transacted BU IT resource gap after the BU is disconnected from the divestor corporate IT platform (Leimeister et al. 2012). To the extent that the acquirer's corporate IT platform provides similar functionality, the gap is addressed with data transfers from the divestor to the acquirer (data extract operation) (Leimeister et al. 2012). For IT functionality with no match in the acquirer's corporate IT infrastructure, IT support services are frequently provided by the divestor through TSAs until the acquirer has implemented the corresponding IT functionality (Dudek et al. 2020).

Now, compare the ideal world IT carve-out with one in which the divestor exhibits low structural alignment (see Appendix B). First, consider structural misalignment that occurs in the form of variations across BUs in how the corporate IT platform are leveraged (Figure 2 in Section 2.4)[4]. An example of such structural misalignment is a multi-national MBO in which Heads of Country are appointed to oversee the operations of the sales and service units for each BU's international operations in each country. The Heads of Country request changes to the delivery of shared services from the corporate platform to conform with local privacy laws or other forms of regulation. These changes vary across countries. In a divestment, the effect of this variation on IT carve-out project complexity is that for each country, the change must be identified and applied to the transacted BU's IT-based business processes (Anselmi and Autry 2010). This process creates more interfaces to be cut (structural complexity) and uncertainty about to which countries this applies and in what way (dynamic complexity). Below, PSU provides an example of this effect.

As Brown and Magill (1998) and Ross et al. (2006) discuss, there is frequently conflict about the decision rights over IT assets or between the assumed decision rights over IT assets between BUs and the corporate centre. Here, the issue is that any decisions that create variations across BUs in how they leverage the corporate IT platform create more work. Furthermore, when those variations are not formally

[4] A theoretically possible exception to the arguments developed on the impact of structural misalignment is the 'under-integration' of a BU relative to the shared corporate IT platform. Analytically, we treat this as an example of pre-emptive disintegration with the intention to divest the under-integrated BU. This situation is further elaborated in relation to Propositions 1d-e and in the Discussion as a proactive approach to avoid TSAs.

documented, they increase carve-out project complexity because the variations need to be identified and resolved. Because variations may not affect BU performance for business as usual, they are at risk of not being recognised or formally documented (Brown and Magill, 1998). However, divesting a BU is not business as usual and the variation in dependencies, particularly when they are not documented, potentially contributes significantly to IT carve-out project complexity.

So, while any IT carve-out would present tasks aimed at the separation of the BU from the IT enablement of the corporate IT platform, structural misalignment in the form of variations between how BUs leverage the corporate IT platform leads to higher structural and dynamic complexity in the IT carve-out because of variations that may be poorly documented. In simple terms, there are in this form of structural misalignment local customisations that likely are poorly documented and need to be sorted out and addressed as part of the separation.

Proposition 1a: *IT structural misalignment in the form of variations in how the BUs leverage the corporate IT platform increases IT carve-out project complexity*

Structural misalignment furthermore occurs when BUs build and develop interdependent IT applications that should be developed and maintained at the corporate level as shared services or kept independent at the BU level (Reynolds and Yetton 2015). Such interdependence has two consequences for the IT carve-out project. First, dependencies require more tasks to be executed in the IT carve-out project, which means increased structural complexity (Section 2.2). Instead of being able to migrate the data or transfer an independent system, the divestor must untangle shared data structures and system dependencies before transferring them (Leimeister et al. 2012).

Second, there is no natural owner of the relevant BU IT assets to take responsibility for separating the BU IT application portfolios within the IT carve-out project. Effectively, the decision rights over BU IT application portfolios have become shared among BUs (c.f. Eisenhardt and Bourgeois 1988). If the transacted BU is supported by an application controlled by another BU, the IT carve-out project incurs additional complexity resulting from discovering and identifying the dependency that may or may not be documented and to involve the other BU's IT function in the IT carve-out project, which means increased dynamic complexity (Section 2.2).

So, while in a high structural alignment context, no other BU will be directly impacted by or involved in the IT carve-out project, and structural misalignment in the form of interdependencies between BUs' IT application portfolio leads to more structural and dynamic complexity in the IT carve-out project.

Proposition 1b: *IT structural misalignment in the form of interdependencies among BU IT application portfolios increases IT carve-out complexity*

3.1.2 IT functional (mis)alignment and IT carve-out complexity

The effect of structural misalignment on IT carve-out complexity is direct in that such misalignment creates additional and more ambiguous tasks in the IT carve-out. Furthermore, the limited empirical research that exists on IT carve-outs (Böhm et al. 2010; Fähling et al. 2010) fits with the conceptual arguments.

In comparison, the effect of functional (mis)alignment is indirect and more uncertain. Functional misalignment concretely means that the IT assets enabling a BU are not effectively doing so (see Appendix B). They do not create valuable IT-based capabilities that allow the BU to compete effectively in its market. While there may be many reasons for functional misalignment, lack of IT investments in a BU that is subject to divestment considerations is one such cause. This was the case when Kléber divested its industrial hose BU to Trelleborg (Henningsson and Carlsson 2011), and when Rhodia divested its food ingredients BU to Danisco (Yetton et al. 2013).

A valid question arises, therefore, as to whether the acquirer would be interested in keeping these non-effective IT assets post-acquisition. Conversely, if the BU had very effective IT-based capabilities, the enabling IT assets could be expected to be more valuable to the acquirer. The important consequence is that for the divestor, the IT carve-out project might in the end be *less* complex because of functional misalignment: fewer IT assets to transfer or replicate to the acquirer, and more reliance on data transfers only.

Contradicting this theoretical argument are two empirical observations of functional alignment not being a short-term concern when the acquirer is designing the IT integration strategy. Both Mehta and Hirschheim (2007) and Baker and Niederman (2013) found that in the short term, the acquirer is focused on operability, not perfect alignment. Post-acquisition alignment is a later concern when the acquirer consolidates across a number of acquisitions (Jain and Ramesh 2015) or for other reasons needs to undertake a major IT transformation project (Mehta and Hirschheim 2007).

However, these observations about the influence of alignment on short-term IT integration decisions are not made with consideration for the potential difference between acquisitions of stand-alone businesses and BUs divested from MBOs. We therefore include this theoretical effect of functional misalignment in the conceptual model (Figure 3). The effect of functional alignment on IT carve-out complexity is indirect, through the impact of acquirer IT asset requirements, as further addressed in Section 3.2.

Proposition 1c: *Functional misalignment decreases acquirer IT asset requirements*

3.1.3 Business relatedness, alignment and IT carve-out complexity

Besides pre-divestment alignment, several contextual conditions are likely to impact an IT carve-out project's complexity (c.f. Jain and Ramesh 2015). For example, organisational size, degree of IT enablement, IT flexibility and modularisation can all be expected to impact structural and/or dynamic complexity (see Literature Review). The impact of these conditions might be substantive, but they fall outside the boundaries set by alignment theory as the explanatory framework (see Discussion on boundary conditions) and therefore are not included in this model.

The condition of business relatedness is, however, important to recognise within an alignment-based explanation to IT carve-out complexity, because alignment partly moderates the effect of relatedness. BUs in an MBO (as opposed to a conglomerate) are per definition related businesses, but the degree of relatedness can vary (Christensen 1998). Concretely, in a highly related MBO, the corporate layer, including the IT platform, would be 'thicker' (more shared services) than in an MBO with a set of more independent BUs (Christensen 1998). Generally, the more integrated a BU is pre-divestment the more work there is to be done in the IT carve-out. The degree of pre-divestment integration is a condition that has been linked to IT carve-out complexity by previous research (Leimeister et al. 2012; Leimeister et al. 2008). This is an impact similar to the impact of size, degree of IT enablement and other contextual conditions.

The effect of business relatedness on IT carve-out complexity is, however, relevant to consider within an alignment framework for two reasons. First, the impact of high relatedness decreases with functional misalignment as explained in Proposition 1c. High business relatedness of the divested BU increases the potential need to replicate IT assets, but this is offset by functional misalignment reducing the same need. Second, it is theoretically possible that a highly related BU is 'under-integrated' relative to the shared corporate IT platform. This is a form of structural misalignment. In this case, the BU would—instead of leveraging the corporate IT platform—duplicate such services at the BU level. While there might be several underlying causes for this situation, this resembles a situation of pre-emptive disintegration with the intention to divest the under-integrated BU. For example, in its strategic repositioning from conglomerate to MBO, Danisco decided to treat potential divestment BUs as independent businesses (i.e., its sugar business) and allow them to duplicate services provided by the corporate IT platform at the BU level (Yetton et al., 2013). This situation is further elaborated in the Discussion as an approach to proactively reducing IT carve-out complexity and thereby the need for TSAs.

Therefore, within an alignment framework, the important consideration regarding business relatedness is that misalignment can reduce the impact of high business relatedness on IT carve-out complexity.

Proposition 1d: *Business relatedness of the divested BU increases IT carve-out complexity*

Proposition 1e: *Structural (relative independence of a transacted BU) and functional misalignment reduce the effect of high business relatedness on increasing IT carve-out complexity*

3.1.4 The PSU case: pre-divestment misalignment

In PSU, many of the shared IT assets were not corporate IT assets. Instead, they had been developed by one of three BUs and then shared with the other two, creating highly interdependent BU IT application portfolios. Because of the governance issues in such an arrangement, there were many poorly documented IT asset interdependencies over which the decision rights between PSU and the other two BUs were unspecified or conflicted.

Critically, these assets had no unique owner who could be charged with the responsibility for that component of the IT carve-out project. Carving out separate databases and IT support systems for the transacted BU required a major IT carve-out operation, including system replication, because neither the divested BU nor the remaining BUs would be viable without the shared IT assets. One such shared system was a customer relationship management (CRM) system, including its database, operated by the transacted BU but used by the other two BUs.

In a state of high structural alignment, each BU would have operated distinct IT application portfolios. Under those conditions, any IT assets required by the acquirer from the IT application portfolio of the transacted BU could be transferred to the acquirer. Instead, high structural BU IT misalignment contributed directly to the structural and dynamic complexity of the IT carve-out project at the BU level of analysis. For example, the interdependencies among the BU IT application portfolios required the involvement of the IT staff from the other two BUs in the carve-out project, increasing its complexity and cost.

The high dynamic complexity of the IT carve-out project became evident as the project took into consideration the potential ripple effects across multiple BU IT application portfolios. Because the related interdependencies were not well documented, the carve-out of one BU involved major disruptions to the other BUs that were not directly included in the divestment and over which the IT carve-out team had no formal decision rights.

At the corporate level, ComputerServices had made decisions about customising the corporate IT assets for PSU's foreign subsidiaries. While implemented by the corporate shared services function, these assets were components in PSU's unique IT application portfolio, an example of corporate IT structural misalignment. When establishing the carve-out project, it was unclear who owned (had the decision rights over) these IT assets and, therefore, who had the responsibility for their identification, carve-out and transfer to the acquirer.

Customisation of shared corporate IT services of standard systems increased the dynamic complexity of the IT carve-out project. Each customised system had to be identified, documented and subsequently carved out with a system replication or transfer operation that included the local customisation. If not, the divested BU would have faced major business disruptions. Frequently, these local systems included poorly documented workarounds. This increased the IT carve-out project's dynamic complexity compared with the situation in which corporate and BU IT structural alignment is high.

3.2 The IT carve-out project

In Figure 3, the output of the IT carve-out project takes three forms: IT assets that are transferred to the acquirer, IT assets that are required by the acquirer but made available through TSAs and surplus IT assets that are not needed by the acquirer or the divestor (Leimeister et al. 2012; Leimeister et al. 2008). These three outputs are subject to different deadlines (Gillingham and Stimpson 2008; Thomas et al. 2017).

Three vertical lines at Legal Day 1, Operational Day 1 and Transaction Complete mark the time boundaries for the IT carve-out project (see Section 2.1). Legal Day 1 and Operational Day 1 readiness are defined in the transaction contract (Leimeister et al. 2012). The time constraints have three consequences for divestor behaviour. First, the acquirer cannot specify its IT requirements before the signing because of anti-trust and other regulatory requirements (see Section 2.1). Therefore, before Legal Day 1, the divestor does not know the IT assets to be transferred to the acquirer. Second, the carve-out BU must satisfy the requirement for Operational Day 1 readiness. This is the primary reason for adopting TSAs (Dudek et al. 2020). If (when) it becomes apparent that the carve-out team cannot satisfy Operational Day 1 readiness, TSAs are the only practical option for the divestor to meet its contractual obligations. Third, Transaction Complete is not specified in the transaction contract (Dudek et al. 2020). Instead, progress in the acquirer’s post-acquisition IT integration project determines the timing for the termination of each TSA.

The three relationships represented by solid arrows (P2a-P2c) in Figure 3 are documented in the practice and in the emergent IT carve-out literature reviewed in Section 2. Here, we inspect those relationships to identify their combined effects on the three forms of IT assets that are output of the IT carve-out project. The assets to be transferred to the acquirer before Operational Day 1 are included in Figure 3 for completeness of argument. However, after these IT assets are transferred to the acquirer, they do not affect divestor performance.

3.2.1 Acquirer IT requirements, surplus IT assets and IT carve-out project complexity

Acquirer IT requirements have two effects on the IT carve-out project (see Figure 3). First, they partition the divestor IT assets to be carved out into two parts: (1) IT assets required by the acquirer, and (2) IT assets not required by the acquirer. The IT assets included in the latter category are contingent on the post-acquisition IT integration strategy adopted by the acquirer (Henningsson and Carlsson 2011). For example, to complete the IT integration project with an IT absorption strategy, the acquirer would require only a data file, a subset of the IT assets that supported the transacted BU pre-divestment. Even though it may be difficult to disentangle and separate a large data set, the potential ripple effects from disconnecting systems from one another are avoided (Ciborra et al. 2000).

Implicitly, but not explicitly, acquirer IT asset requirements define the surplus to requirements IT assets that are retained by the divestor post-divestment until they are decommissioned. There is no fixed deadline for decommissioning the surplus IT assets. In Figure 3, this is shown by the construct surplus IT assets transcending the Operational Day 1 and Physical IT Separation time constraints.

In modelling the effect of acquirer IT asset requirements, we follow a general resource redeployment view of acquisitions (see, for example, Capron et al. 1998) and do not distinguish between the potential qualitative differences between different types of IT assets, for example between data and applications. Acquirer IT asset requirements then refers to the amount of IT assets enabling the transacted BU that the acquirer wishes to redeploy post-acquisition. This is a simplification that does not recognise, for example, the difference between data and systems as distinct types of assets with unequal contribution to IT carve-out complexity. The simplification, however, allows us to specify the direction of the relationship. Making this simplification, the higher the amount of IT assets the acquirer wishes to redeploy post-acquisition, the fewer completely redundant IT assets post-transaction.

Proposition 2a: *Acquirer IT asset requirements decrease the surplus IT assets in IT carve-out projects*

The second effect of acquirer IT asset requirements is that they contribute to IT carve-out project complexity through their effect on the operations of the project (see Figure 3). IT carve-out project complexity is defined in Section 2.1 as structural and dynamic complexity (Xia and Lee 2005) contingent on carving out the BU and corporate-level IT assets that, pre-divestment, enabled the operations of the transacted BU.

Contingent on acquirer IT requirements, the divestor pursues a corresponding mix of the IT carve-out operations described in Table 2. For example, an absorption IT integration strategy may only require a data extract operation to transfer the required data from the divestor to the acquirer (Henningsson and Kettinger 2016). In contrast, a best-of-breed strategy may require that both data and the IT systems supporting the required business processes are transferred to the acquirer (system transfer/replication operation) and rebuilt on the acquirer's corporate IT platform. The former is illustrated by the acquisition of Rhodia's food ingredients business by Danisco and the latter by Danisco's acquisition of Genencor (Yetton et al. 2013).

Thus, the IT carve-out assets required by the acquirer (as opposed to the surplus IT assets) affects the number of IT carve-out operations. The associated structural and dynamic complexity (see Table 2) of each operation contributes to IT carve-out project complexity.

Proposition 2b: *Acquirer IT asset requirements increase IT carve-out project complexity*

3.2.2 IT carve-out project complexity, time constraints and TSAs

Not all IT transaction projects between divestors and acquirers are complex. Above, in Proposition 1, we show that pre-divestment IT alignment conditions and business relatedness impact IT carve-out project complexity. Propositions 2a and 2b explain the contribution of acquirer IT asset requirements to IT carve-out complexity.

In an IT carve-out project with low complexity, the IT assets required by the acquirer are likely to be delivered within the expected time frame[5]. In contrast, with increasing project complexity, the transfer of IT assets to the acquirer is incompatible with the set Operational Day 1 (Gillingham and Stimpson 2008).

The time constraint contingent on satisfying Operational Day 1 readiness is particularly problematic in the context of IT carve-out projects because the time constraint on the project is not based on an estimate of the time required for the project but set by market expectations for the acquirer to realise acquisition benefits (Mehta and Hirschheim 2007). The time from Legal Day 1 to Operational Day 1 (also known as Time to Synergy) is a critical performance metric for the IT transaction project (Toppenberg et al. 2015).

[5] It is beyond the scope of this conceptual paper to determine the threshold for low vs high IT carve-out complexity.

In contrast, the elapsed time from Operational Day 1 to Transaction Complete is not subject to a strict deadline and frequently exceeds Operational Day 1, which then becomes an operational intermediate state (Gillingham and Stimpson 2008). In Figure 3, this is shown with the IT assets supporting the TSAs transcending the time constraint labelled Operational Day 1.

The difference between these two measurers of time-based performance explains why TSAs are adopted. Financial markets treat any delay to Operational Day 1 as a forward indicator of threats to the success of the acquisition (Mehta and Hirschheim 2007). Therefore, TSAs are attractive because they make an earlier Operational Day 1 possible by providing reliable IT enablement until Physical IT Separation (Leimeister et al. 2012; Leimeister et al. 2008).

Proposition 2c: *IT carve-out project complexity and time constraints to satisfy Operational Day 1 readiness increase the adoption of TSAs*

In combination, interactions among acquirer IT requirements, IT carve-out complexity and time constraints (P2a-2c) determine the IT assets that fall into each of the three carve-out categories in Figure 3. By Operational Day 1, a set of IT assets is transferred to the acquirer (Proposition 2a). Subsequently, these IT assets do not affect post-divestment performance. As noted above, they are included in Figure 3 for completeness of the argument.

Beyond Operational Day 1, TSAs add work to the carve-out project and are expensive. However, the costs associated with decommissioning surplus IT assets and supporting TSAs, while non-trivial, would not be a deal breaker for divestments of the size of PSU (Gillingham and Stimpson 2008). Ideally, TSAs would not exist, but they are necessary when the work to carve out the IT assets does not fit into the time available (EY 2019; Gillingham and Stimpson 2008). This delivers another benefit to the acquirer by allowing the acquirer to sequence the IT integration project, rapidly realising some acquisition benefits while leaving fundamental technological change as a long-term prospect (c.f. Busquets 2015).

However, adopting TSAs imposes a major constraint on the divestor. The additional benefit to the acquirer above makes explicit that adopting TSAs assigns to the acquirer the decision rights over the dates at which TSAs are terminated. As discussed below in Section 3.3, this restricts the divestor's ability to reconfigure its IT resources to support its post-divestment corporate strategy until after IT Physical Separation.

3.2.3 The PSU case: IT carve-out project complexity and TSAs

For EurasiaTech, the acquisition was a vertical market extension, representing a new business model and a new set of business processes for which it had little pre-existing IT enablement. EurasiaTech needed access to most of PSU's IT enablement to maintain PSU operational. The short-term concern was not functional alignment but staying operational. This was specified as a condition in the transaction contract, with a five-month deadline for Operational Day 1. It was also specified in the contract that ComputerServices would carry the full cost of the IT carve-out project.

The PSU IT carve-out project immediately ran into problems with meeting the five-month deadline due to poorly documented system interdependencies. Because of delays in identifying the relevant local IT applications, their timely transfer to EurasiaTech became a threat to the IT transaction project and ultimately to realising synergies for the acquirer. Because of the contractual obligations, the acquirer's requirements came to dominate the IT carve-out project. A dedicated manager was appointed to handle problems with undocumented customised corporate IT services and the IT carve-out project team was increased from 20 to 50 members.

Consultants were also hired to address the issue of interlinked and shared BU IT assets. They developed a combination of TSAs and Reverse Transitional Service Agreements (RTSAs) in which the transacted BU's IT assets were transferred to the acquirer and the RTSA allowed the divestor temporary access to those assets. The extensive use of TSAs and RTSAs—both at the BU level to support all BUs where shared IT assets existed and at the corporate IT level where local customisations made it difficult to replicate IT assets—enabled the two organisations to reach Operational Day 1 readiness within six months of Legal Day 1. Physical IT Separation was not achieved until twelve months later.

3.3 IT stranded assets, post-divestment IT alignment and divestor performance

To explain the effects of the IT carve-out project on divestor performance, we treat the IT assets that are retained but not required by the divestor, including those that support TSAs, as a form of stranded assets (Cristo and Falk 2006; Fubini et al. 2013). These IT stranded assets can have three effects on divestor post-divestment IT misalignment: reducing the functional alignment of the corporate IT platform, reducing the functional alignment of the remaining BU's application portfolios and preserving structural misalignment post-divestment. Because organisational performance is impacted by functional and structural misalignment, increasing misalignment has negative effects on organisational performance.

3.3.1 IT stranded assets

In Section 2.3, stranded assets are defined as assets that have suffered from premature reductions in value but have retained associated cost (Cristo and Falk 2006). As shown in Figure 3, IT stranded assets partly originate in the surplus IT assets that are no longer needed anywhere. At Operational Day 1, they become stranded assets as they are no longer of use. Financially, investments in these assets need to be written off. In addition, actually decommissioning them may be costly as both data and systems need to be separated from the remaining useful IT assets. Ideally, these IT stranded assets are decommissioned immediately. However, known cases indicate that residual data and components may be lingering for many years until the next major platform upgrade (see, for example, Mehta and Hirschheim 2007).

The IT assets enabling the TSAs would also be stranded in the sense that they lose some of their value. IT assets in the form of platforms and applications are typically reusable, having a flat cost structure (Yetton et al. 2013). The notion that an IT asset is subject to a TSA means that when released, the value extracted from the asset will decrease when part of the business the asset supports is divested (c.f. Capron et al. 1998).

If two BUs use the same IT asset and one is divested, the cost of the asset will remain post-divestment, but the value of the asset will be halved post-divestment.

IT assets with TSAs are special in that they are difficult for the divestor to reconfigure while subject to TSAs (Dudek et al. 2020). In Figure 3, the IT assets required to establish and support TSAs (Proposition 2c) cannot be reconfigured or decommissioned until the TSAs are terminated. This occurs at or before Physical IT Separation, which can be more than a year after Operational Day 1. In the case of PSU, this was 18 months after Legal Day 1 when the acquirer became the owner of the divested BU.

Proposition 3a: *Surplus and TSA-enabled IT assets that are retained by the divestor increase the divestor's post-divestment IT stranded assets when the business they support is transferred or transformed.*

3.3.2 IT stranded assets and IT misalignment

IT stranded assets contribute to IT misalignment in three ways: by reducing the functional alignment of the corporate IT platform, by reducing the functional alignment of the remaining BU's application portfolios and by constraining the restoration of structural alignment post-divestment.

First, in Section 2.3, the brief review of the negative effects of stranded assets on post-divestment performance identifies shared services as a major cause of such effects when the shared services cannot be optimised post-divestment to match the reduced demand for their services (Cresap et al. 2020). For example, consider the situation in which the divestor operates a supply chain management (SCM) system as part of its corporate shared services to support the operations of its BUs. The SCM system would have been developed with consideration of the total user base, geographical locations, customer groups, etc. of all BUs. It would also have stored the data for all BUs. After divesting one of the BUs, the SCM system would no longer be optimised to support only the remaining BUs.

Contingent on the IT stranded assets, there would be unused capacity, including over-capacity in user enablement, sub-optimal license agreements, data with no meaning and value and an over-staffed operational team. At best, this additional capacity would just be unused, raising charge out costs for all BUs. More likely, it would also reduce corporate IT flexibility to support IT-based business innovations to benefit the remaining BUs. In this way, IT stranded assets inhibit business and IT alignment co-evolution (Hirschheim and Sabherwal 2001; Reynolds and Yetton 2015).

Second, IT stranded assets also affect the functional IT alignment of the remaining BUs, contingent on there having been structural misalignment on the BU level pre-acquisition (Proposition 1b: interdependencies between BU application portfolios). Consider two BUs that had closely coupled IT application portfolios, in the sense that each BU provided the other BU with IT-based business services that it had developed. One of the BUs was divested. The question is: what happens to their shared IT application portfolios and therefore to their BU IT alignment post-divestment? For the divested BU, the carve-out project must replicate any data and IT-based BU services provided by the other BU that are required by the acquirer, contributing to the IT carve-out complexity and cost of the carve-out project.

For a remaining BU, there are potential implications from the IT carve-out project. One is that the remaining BU needs to replicate the IT-based business services provided by the transacted BU and any data from those systems. Critically, this includes the people-based IT capabilities required. This is not the responsibility of the carve-out team (Anselmi and Autry 2010). Furthermore, at this stage of the carve-out project, the resources of the carve-out team would be stretched to achieve Operational Day 1. In addition, some of the IT assets that supported the divested BU would now be surplus to requirements for the remaining BU, so the remaining BU must downsize its IT assets.

In addition, even if all IT-based business systems and data required by the remaining BU are replicated, the systems may need to be rebuilt either within the remaining BU IT application portfolio, or alternatively when more than one remaining BU needs access to these IT-based business processes within the divestor corporate IT platform. The latter would increase the demand on corporate IT resources already committed to establishing the TSAs before Operational Day 1 and managing them until Physical IT Separation. Therefore, when structural misalignment at the BU level is a pre-divestment condition, this increases the risk of functional misalignment within the remaining BUs post-divestment.

The third way that IT stranded assets create IT misalignment is through the paralysing effect of TSAs. In this sense, TSAs affect the co-evolution of business and IT alignment (Zhang et al. 2020), restricting the capacity of the IT organisation to respond to changes in the business strategy. TSAs have a major negative impact on the pace of business restructuring (Du and Tanriverdi 2010; 2014). While TSAs do not directly create corporate IT misalignment, their use, particularly when addressed at the corporate IT platform, means that the IT assets supporting them cannot be reconfigured (Dudek et al. 2020) because the reconfiguration would effectively require two parallel corporate support systems to be established. In this parallel arrangement, the existing system aligned with the corporate business strategy prior to the divestment would be retained to support the divested BU. The new system would be aligned with and support the new corporate business strategy post-divestment. However, this would be an expensive and complex solution (Thomas et al. 2017). The alternative, to delay the reconfiguration and temporarily accept non-optimal IT assets, is an attractive short-term option (Thomas et al. 2017).

Note, TSAs at the BU level with constraining effects on remaining BU would only happen if there were dependencies between BUs' IT application portfolios (Proposition 1b). Regardless of whether the TSA paralysis occurs at the corporate or BU level, this is an indirect form of IT structural misalignment (Reynolds and Yetton, 2015) corresponding to no one being given the decision rights over the IT assets required to reconfigure and align the IT assets with the new business strategy. TSAs are commonly in place for up to three years (Dudek et al. 2020). While this is taking place, the divestor remains in structural misalignment.

In summary, IT stranded assets contribute to divestor IT misalignment through reduction of functional alignment at the corporate level and at the BU level. Furthermore, the use of TSAs extends the elapsed time during which divestor IT misalignment cannot be reconfigured and thereby has an effect on structural misalignment. As explained above, these three effects are each contingent on the presence of specific conditions and can to some extent be mitigated by (costly) interventions. Nevertheless, the overall effect of stranded IT assets on alignment is negative.

Proposition 3b: *Post-divestment IT stranded assets increase both functional and structural misalignment in the divestor*

3.3.3 Post-carve-out divestor performance

To complete the logical sequence from IT carve-out complexity to organisational performance, the IT alignment literature has established the general relationship between increases in IT misalignment and decreasing organisational performance. Within the Reynolds and Yetton (2015) framework, this effect is explained by the impact of structural misalignment on IT governance (Eisenhardt and Bourgeois 1988) and functional misalignment on IT-based competencies (Powell and Dent-Micallef 1997; Queiroz et al. 2020). Not repeating general theoretical arguments, we here focus on how the identified forms of misalignment each impact performance, including the expected endurance of these effects.

As addressed above, the paralysing effect of TSA can impact decision rights both at the corporate level and in the remaining BUs. The latter would only happen if there were dependencies (structural misalignment) between the BUs in the first place (see Proposition 1b). If the IT strategies of the BUs were independent from each other in the first place, this would not happen. The paralysing effect on corporate IT strategy would be a combined function of the factors that drive the use of TSA, including structural misalignment, time constraints, acquirer requirements and various contextual conditions. Of these contextual conditions, the relatedness of the divested BU is likely to be an important determinant. A largely independent BU would share few IT assets with the corporation and therefore be subject to a lower risk of paralysis at the corporate level (see Proposition 1c).

The effect of structural misalignment is reduced IT governance at the corporate and/or BU level. This means tensions in decision-making, slower pace of change and increased internal transaction costs (Eisenhardt and Bourgeois 1988). Beyond not being able to restore an optimal IT configuration, reductions in IT governance inhibit the divestor from seeking out new business opportunities in line with the new, post-divestment strategic focus (Reynolds and Yetton, 2015).

The endurance of this performance effect would be a matter of the continuation of TSAs. These are typically in place for 6-18 months (Thomas et al. 2017) but can also linger for several years (EY 2019). Importantly, the nature of this effect makes it possible to actively manage, if recognised. While some TSAs might be needed to give the acquirer time to reconfigure the transacted unit (Du and Tanriverdi 2010; Du and Tanriverdi 2014), divestors could push hard to minimise this period of structural misalignment. We expect that some divestors would do this, and we therefore expect high variance around the mean time of the effect of structural misalignment.

The effect of functional misalignment potentially impacts IT-based competences at both corporate and BU levels. The impact at the BU level is on the remaining BUs' IT-based organisational competences (Makadok 2010; Makadok 2011)—concretely, the relative cost structure of the BU compared to market rivals. This will reduce the BU's ability to compete in its own market (Quaadgras et al. 2014). Essentially, this is the *opposite* of the alignment improvement in BU functional alignment which Queiroz et al. (2020) have shown to have both significant and substantive impacts on organisational performance.

This effect on performance is a result of lowered sales (because a part of the business is divested) but sustained cost. Because the effect materialises as a cost increase (typically more stable than revenue variations and thereby detectable) and is isolated to a specific BU, the effect of functional misalignment at the BU level is likely to be temporary; the performance loss would be obvious to the BU managers. If *material*, the BU would address this issue much sooner than the reported up to three years impact of stranded assets (Cresap et al. 2020). However, if this occurred in more than one BU, the total performance loss could still be substantive.

Second, for the effect of reductions in functional alignment at the corporate level, consider corporate IT assets with a flat cost structure. From divesting a single BU in an MBO the relative reduction in utilisation would be lower, compared to if an IT asset used by only two BUs lost half of its user base. However, because of the multiplier effect (Queiroz et al. 2020), the reduction at the corporate level reduces the performance of *all* remaining BUs. Furthermore, this reduction in performance would in a typical financial charge-back model for IT expenses be distributed as a minor increase in each BU's overhead IT expenses (1998). It is therefore less likely to be immediately identified and rectified by reconfiguration, compared to functional misalignment at the BU level. This conclusion is consistent with the three-year delay in the strategy literature for correcting stranded assets (Cristo and Falk 2006).

Thus, while the nature and persistence of the three forms of possibly induced post-divestment IT misalignment vary, these forms of misalignment all impact post-divestment performance negatively.

Proposition 3c: *Divestment-induced IT misalignment reduces IT-based organisational competencies and IT governance, which decrease divestor performance*

3.3.4 The PSU case: post-divestment alignment and performance

At both ComputerServices and EurasiaTech, the IT transaction was considered a success, given the unanticipated challenges faced during the IT carve-out resulting from pre-divestment misalignment. While the divestor's own staff focused on the contractual obligations, a consulting company was hired with the specific task of identifying how the remaining BUs and IT assets would be affected by the carve-out project.

After Operational Day 1, the IT carve-out project proceeded at a much slower pace. A year later, 18 months after Legal Day 1, most of the TSAs had been terminated. At this stage, the customisations of the corporate IT assets made to support PSU's local practices were still in place, and most of the data pertaining to customers, products and processes in PSU were still present in the ComputerServices corporate IT shared services and in the remaining BU IT application portfolios that had been shared with PSU.

So, after Operational Day 1, ComputerServices retained two sets of IT stranded assets. One comprised the IT assets for which there was no longer any use. The other was the IT assets previously supporting the TSAs that provided the PSU business with continued access to the ComputerServices corporate IT platform and shared IT applications at the BU level. Because the time constraints exerted by the IT transaction project were gone, resources committed to the clean-up after the IT carve-out were fewer and progress was slow.

Most TSAs remained in place for a year. During this time ComputerServices could not retire the affected IT assets, and IT licenses were expensed while not being used. In this case, ComputerServices bore the full cost of the TSAs and RTSAs for two reasons: its handling of the contract negotiations and its inability to undo the customisations that had occurred within its corporate IT domain.

Because PSU was divested by ComputerServices to fund aggressive growth in the remaining BUs, it became a problem when these plans could not be fully implemented at the corporate or BU levels. As the business strategy of ComputerServices evolved, the company faced the dilemma of its 'frozen' IT assets becoming less and less aligned with its evolving business strategies or delaying the implementation of the new business strategies until the TSAs were terminated. ComputerServices chose the latter and focused on terminating the TSAs.

Once the TSAs were terminated. ComputerServices began the process of undoing the impact of the divestment of PSU on corporate- and BU-level IT assets, including decommissioning systems, cleaning out data and reversing local customisation. At the closure of the case study, part of this had been achieved and it was accepted that the remaining IT stranded assets would stay in place until the next major IT system upgrade.

4 IMPLICATIONS FOR THEORY AND PRACTICE

This paper addresses the gap in the IT M&A research literature on the IT carve-out project by the divestor and its effects on post-divestment performance. An explanatory model is developed that explains three core relationships: (1) How pre-divestment IT alignment conditions and business relatedness increase IT carve-out project complexity (Propositions 1a - 1d); (2) How acquirer IT requirements partition the IT assets to be carved out into three components (Propositions 2a - 2c); and (3) How post-divestment IT stranded assets and IT misalignment threatens divestor performance (Propositions 3a - 3c).

4.1 Implications for theory

The primary contribution of this research is that it is the first theoretical model in the IT M&A literature to focus on the IT carve-out project and divestors' pre- and post-divestment attributes as critical components of value creation for divestors in M&As. This research also makes a secondary contribution to the broader field of IT strategy with observations on the critical roles of time and IT stranded assets in strategic transformations involving IT resources.

4.1.1 Contributions to the post-acquisition IT integration literature

We introduce two new divestor-centric constructs and link them into a nomological network with established constructs from the IT M&A literature to contribute a divestor-centric model of the IT transaction. In doing so we also make a secondary contribution to the acquisition IT integration literature and observations of relevance for the broader field of IT strategy.

The IT carve-out project complexity construct highlights that the divestor is an active participant in the IT transaction, and that IT carve-out projects involve varying degrees of risk and uncertainty with temporal implications for both the divestor and acquirer. The construct also underlines the critical difference between acquiring an integrated BU from an MBO versus a stand-alone business unit. The latter enjoys much more room to work out the optimal IT integration design and for serendipitous value creation (Busquets 2015). As Busquets writes (2015, p. 178): "while some steps that lead to synergies can be planned in advance, other essential variations are only learned and discovered during the M&A process itself, thus leading to emergent synergies". In the case of acquiring a BU from an MBO, the IT carve-out complexity may threaten such discovery processes and increase the need to articulate the synergistic potential upfront to ensure access to enabling IT assets.

IT carve-out project complexity has a central role in the explanatory model because it affects the organisational transaction time to Physical IT Separation. Until this point, the divestor, locked into a misaligned IT configuration based on its pre-divestment corporate strategy, cannot reconfigure its IT assets to support its new post-divestment strategy effectively. The importance of time has been observed in past research on post-acquisition IT integration (Mehta and Hirschheim 2007). Our addition is that we further elaborate on the impact of time on the divestor's value creation.

In combination, IT carve-out complexity and time constraints create IT stranded assets, a second novel construct in the explanatory model. To the authors' knowledge, this is the first research that identifies and explains IT assets as a specific form of stranded assets with negative effects on post-divestment IT alignment and hence on divestor performance. This form of value destruction is not accounted for in the literature on IT integration (see Henningsson et al. 2018). Additionally, as incumbents are seeking new routes for digital innovation that challenge the existing modes of operation (see Hanelt et al. 2021), a similarly destructive effect on IT assets is likely to occur, as IT assets are leveraged in novel ways for which they were not designed.

In addition, drawing on the practice literature, we include TSAs and their effects as critical components of the explanatory model in Figure 3. TSAs are a technically robust mechanism to enable the divestor and acquirer to jointly deliver Operational Day 1 readiness. The analysis above shows how TSAs have an unintended and undocumented effect on divestor performance.

Identifying how divestor alignment conditions impact IT carve-out complexity and divestor performance extends a stream of research that frames IT in M&As as an alignment challenge (Johnston and Yetton 1996; Mehta and Hirschheim 2007; Wijnhoven et al. 2006). The effects of IT carve-out complexity on the divestor described in this paper are similar in form to previous observations in the post-acquisition IT integration literature about how the IT carve-out project can constrain the IT integration project (e.g., Henningsson and Carlsson 2011) by generating IT misalignment in acquirers.

For research on IT in M&As these contributions have at least three important implications. First, the model and the carve-out-specific constructs developed here can be used to catalyse a research stream specifically on IT carve-out challenges. Research in the area has been largely empirically driven, making for fragmented observations about IT carve-out practices (see, for example, Fontaine 2012; Leimeister et al. 2012; Leimeister et al. 2008; Pflügler et al. 2015). This work integrates these observations into a coherent theoretical framework. In doing so it provides an opportunity to conceptually position future empirical findings and thereby enable cumulative knowledge creation. Such findings could, for example, address other drivers of IT carve-out complexity or different forms of outcomes from complex IT carve-out projects.

Second, the contributions here have implications for the research stream on IT integration in M&As that takes an acquirer perspective. While we focus on the effect that IT carve-out complexity has on the divestor, there are logical consequences to infer also for the acquirer. Existing studies, for example, do not account for whether an acquisition targets a stand-alone business or a BU being carved out from a parent company (Du 2015). This research suggests divestor conditions as an importance source of variance and subgroups in the explanation of acquirer performance that should be accounted for in explanatory and predictive models. We also provide divestor-centric constructs that can be used to this end.

Third, an important implication both for research streams on IT issues in acquisitions as well as in divestments is the identification of alignment both as an important pre-condition to and as an outcome of the IT carve-out. This suggests a recursive relationship between outcomes and preconditions, with the possibility of self-reinforcing processes if the activity is repeated several times. While many of the case studies published on the topic of IT in M&A feature acquirers that have performed dozens (see Henningsson and Kettinger, 2016 for an overview of the case-based research) or even hundreds of acquisitions (see, for example, Toppenberg et al., 2015, on Cisco's acquisition program), these acquisitions are always analysed as independent events. The exception is Henningsson (2015) investigating the 'serial acquirer' Trelleborg. Henningsson, however, only analyses the organisational learning in acquisition sequences and not the potential cumulative effects on alignment and organisational performance more generally. This study indicates the relevance of expanding on this work to also consider negative cumulative effects on IT in general and alignment in particular—for example, by analysing sequences of acquisitions and/or divestments not as a set of independent events but as recursive or cumulative processes.

4.1.2 Contributions to the IT strategy literature

While this research has investigated time and IT stranded assets in the context of divestments, there is reason to believe that the observations made should be of relevance to IT and strategic transformations more broadly. The role of time in our explanatory model is novel in IT management research and management research in general. Many reports assert that the importance of time is growing in IT strategy, not least in the light of increasing competition based on digital innovation, industry convergence and digital disruption (Hanelt et al. 2021). Time is also critical to explaining how firms leverage IT as part of the response to disruptive events such as COVID-19, supply chain resilience and cyber-attacks.

With relevance for IT strategy in general, this research shows that when within a sequence of events IT issues are attended to impacts the nature of the challenge as well as its consequences. Just as it is easier to attend to system dependencies before a divestment than in the short time after deal announcement when organisational structures and key decision-makers are in transition, it is naturally compelling to do security upgrades and implement recovery procedures before a cyber-attack occurs. Our observation about time shows that in a fast-moving world the notion of times needs to, to a greater extent than in the past, be incorporated into explanatory models. Time should not be considered something that occurs, but something that could and should be actively managed in IT strategy.

The concept of IT stranded assets is also relevant beyond the M&A context. In the strategy literature, stranded assets are a well-established threat to performance, as it can take years to reconfigure their organisations after strategic changes to restore performance (Fubini et al. 2013). Within the field of IT strategy, IT stranded assets fit within an explanatory terminology alongside concepts such as path dependency and digital options (Rolland et al. 2018). IT stranded assets mirror future-looking options value by pointing to foregone value. Alongside models such as return on investment and net present value, value models based on options thinking have become important to articulating the future possibilities provided by IT investments. In this context, the concept of IT stranded assets makes it possible to articulate negative implications from strategic initiatives and IT investments as well.

4.2 Boundary conditions and explanatory power

The explanatory model's *lawful state space* (Weber 2003) restricts the category of divestor to apply only to those MBOs that divests a BU to be acquired by another MBO. In addition, the category of acquirer is restricted to apply only to those MBO that buys a BU with IT-enabled synergistic potential. BUs in MBOs are, by definition, related businesses and the divestment of a BU would require an IT carve-out project. A large corporation with autonomous BUs would be a conglomerate organisation. The model presented above may not be relevant for the carve-out of a BU from an MBO to be a standalone organisation, a spin-off or an acquisition by a private investment bank or similar investor.

We acknowledge that there are several other drivers of IT carve-out complexity besides pre-divestment alignment, including but not limited to size, level of IT enablement, acquirers' requirements, and IT qualities such as flexibility and modularity. These conditions should in future research be moved to the forefront of analysis. For example, modularity may be a critical attribute to explain why divestors are more or less able to cope with complex IT carve-out projects. Future research should employ different theoretical frameworks that can reveal additional conditions causing IT carve-out challenges and explain additional effects on divestor performance.

Within these constraints on the divestor and the acquirer, the explanatory model depicts a linear causality from pre-divestment conditions, via IT carve-out complexity, to organisational performance. The model does not account for potential dynamic interactions, feedback loops and systemic effects between the variables—for example, the extent to which the potential of IT stranded assets influences a divestment decision or the acquirer’s potentially evolving wishes for IT assets as it discovers new synergy potential (c.f. Busquets, 2015). In each acquisition, IT conditions may be part of the rationale and not just a factor influencing the execution.

The explanatory model furthermore depicts tendencies and not absolute causality. This means that in specific situations the impact chain depicted in our model may never occur. For example, there are three conditions under which IT carve-out complexity would be less of an issue and, consequently, the model would have limited explanatory relevance. First, a long period for regulatory approval would give the divestor time to resolve IT carve-out complexity, assuming that it is recognised as a problem to be resolved. Second, when the acquirer has a full IT setup to support the acquisition, this would enable IT carve-out through data migration only. Third, when the BU is small or has a low level of IT enablement, the IT carve-out project would be of low complexity and have limited impact on divestor performance.

While it is hard to determine exactly the extent of transactions that fall into the category where IT carve-out complexity is substantive and impactful, an indicator of average complexity is that 52% of IT carve-out projects in the study by Ratzer et al. (2014) had a cost above € 25m. The average time for legal approval is reported to be 38 days (Gartner 2019), which is substantially less than the average four months of self-imposed time to Legal Day 1 (Gillingham and Stimpson 2008). The longer times for regulatory approval occur for horizontal acquisitions of competitors, which are at the low end of complexity due to the typical reliance on data migration and IT integration through absorption. Consequently, more than half of the surveyed IT carve-out projects run over Operational Day 1 (Ratzer et al. 2014) and a study by EY found that 39% of divestors had between 26 and 50 TSAs in their last divestment, and 19% had more than 50 (EY 2019). This indicates that high complexity, overruns beyond Operational Day 1 and the adoption of TSAs are a norm rather than the exception.

4.3 Implications for practice

The model of IT carve-out project complexity in Figure 3 creates a framework within which the relative merits of three approaches to managing IT carve-out complexity are discussed. The first strategy is short-term reactive: *Adopt TSAs to push the deadline for Physical IT Separation into the future* (see Figure 1 in Section 2.2 above). This is the standard strategy recommended in the practice literature (Broyd and Storch 2006; Buchta et al. 2009; Leimeister et al. 2012; Leimeister et al. 2008) and adopted by ComputerServices.

The second and third strategies are novel and are implicit in the explanatory model in Figure 3. The second strategy is proactive and short-term: *Begin the IT carve-out project at the same time as appointing financial advisors.* The third strategy is proactive and long-term for the divestor: Establish and sustain high structural IT alignment. Each approach (see Table 4) addresses a different phase in the explanatory model presented in Figure 3.

Table 4. Three strategies to manage IT carve-out complexity

Strategy	**Advantages**	**Disadvantages**
Reactive coping by pushing deadline into the future using TSAs	Robust and proven Minimises waste by acting only for confirmed transactions Works well with low acquirer requirements and/or long time to legal approval	Costly Inhibits divestor IT reconfiguration and retirement of IT stranded assets
Proactive coping short-term with early start	Avoids time constraints on IT carve-out project Enables transparency of IT assets in contract negotiation Makes divested BU attractive to a higher number of buyers Reduces time to acquisition synergy	Waste if BU is not divested Unnecessary if acquirer is ready to absorb transacted unit or long legal approval allows for complex IT carve-out project
Proactive coping long-term with mitigation of structural misalignment to avoid complexity	Makes the company *'ready to divest'* Complementary benefits of improved organisational performance and low-complexity divestments	Costly and time-consuming beyond what can be justified by an individual divestment

4.3.1 Short-term reactive: adopting TSAs

TSAs are effective mechanisms to extend the Physical IT Separation deadline. The direct costs of TSAs are material (Gillingham and Stimpson 2008) but, in the overall schema of the organisational transaction, these costs do not threaten the deal. However, in this paper we identify the indirect costs of restricting divestor strategic renewal, which are harder to measure but potentially more critical.

When adopting TSAs, the divestor focus should include the relative distribution of the impact on the divestor and the acquirer. The PSU case shows that IT carve-out complexity affects the divestor and acquirer differently, depending on how the contract is negotiated. So, when coping with complexity reactively, divestors should seek to favourably negotiate the distribution of any unanticipated IT carve-out costs.

While this would address the direct costs of IT carve-out complexity, it would not address the indirect costs related to the delays in reconfiguring functional and structural alignment until Physical IT Separation is completed. To minimise the indirect cost, the divestor should keep up the pace of the project after Operational Day 1 and decommission TSAs rapidly, then proceed to reconfigure the IT stranded assets.

4.3.2 Proactive strategy to mitigate time constraints on IT carve-out projects

An alternative approach to coping with IT carve-out complexity without introducing TSAs is to relax the time constraints on the IT carve-out project. Fundamentally, this is an alternative temporal disposition of the IT carve-out project, by beginning the IT carve-out concurrently with the decision to divest the BU and to appoint the financial advisors (Figure 4): *The IT carve-out project is decoupled from the post-acquisition IT integration project*. The time available for the IT carve-out component of the transaction could be increased from an average of six months to over 18 months, without overrunning Operational Day 1.

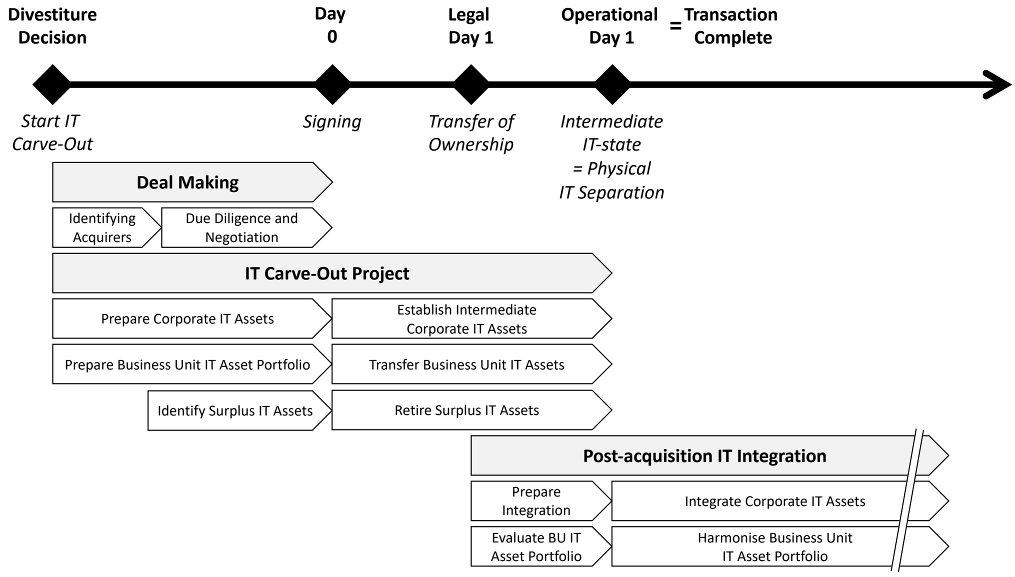

Figure 4. A proactive approach for IT carve-out projects

This strategy allows the divestor to address IT carve-out project complexity without time constraints becoming a factor. In addition, within this approach, the divestor is able to present to buyers the full list of IT assets enabling the divested BU. In a survey by EY (2019), more than half of divestors said that their failure to present an asset as a stand-alone entity scared off buyers or resulted in lower bids. For the acquirer, the benefits include the opportunity to plan its post-acquisition IT integration project knowing that the IT assets will be available on Legal Day 1, as well as the opportunity to discover additional IT-based value in the acquisition (c.f. Busquets 2015).

4.3.3 Reconfiguring divestor structural IT alignment

In Propositions 1c and 1d we articulate the possible effect of high functional alignment on increasing IT carve-out complexity. These effects theoretically mean that a divestor can reduce IT carve-out complexity by *creating* functional misalignment. Voluntarily reducing functional alignment would not present a serious option for any divestor; however, one root cause of IT carve-out complexity that is meaningful to address is divestor structural misalignment.

In practical terms, addressing structural misalignment would require reassigning the IT decision rights among corporate and BU levels to transform the management of the corporate IT platform and BU IT application portfolios. Therefore, addressing divestor structural alignment preconditions would be both costly and not possible in the short run when divesting an individual BU. However, in the broader context considering the possibility of multiple divestments, there may be cause to address the issue.

The applicability of this third strategy is even more relevant if considering that many MBOs both divest and acquire BUs as part of their ongoing strategic repositioning (see Toppenberg et al. 2015). The TSAs put in place to deal with IT carve-out complexity would interact with the next carve-out project by introducing more dependencies among the technical elements. This might contribute to both divestments and acquisitions, increasing misalignment. In that case, developing and sustaining high business and IT strategic alignment is critical because MBO performance is a positive function of alignment (Reynolds and Yetton 2015; Queiroz et al. 2020). Therefore, the third strategy for addressing structural misalignment as root condition to IT carve-out complexity is essentially the strategy of avoiding problems rather than having to resolve them once they materialise.

5 CONCLUSION

This paper contributes to the literature on IT challenges in M&As with the explanatory model addressing the divestor side of organisational transactions in which a BU in one MBO is carved out and integrated into another MBO. IT carve-out complexity is developed as one of two focal constructs in the explanatory model. Drawing on alignment theory, the model identifies divestor alignment conditions as part of the root causes underlying IT carve-out project complexity and explains the effects on divestor post-transaction performance of IT stranded assets, the second focal construct in the explanatory model. This effect is mediated by divestor post-divestment IT and business misalignment. Critically, IT carve-out complexity affects the time the divestor is subject to IT stranded assets and locked in a state of IT misalignment.

Based on the explanatory model, we present three strategies for managing IT carve-out project complexity that expand existing common practice. We argue that the current practice of reactively managing the effects of IT carve-out complexity through TSAs should be replaced with proactive strategies of either commencing the IT carve-out project as part of positioning a BU for divestment to avoid time constraints or enabling continuous M&A activities by addressing the effects of pre-divestment structural misalignment on IT carve-out project complexity, IT stranded assets and divestor performance.

6 REFERENCES

Anselmi, C., and Autry, J. 2010. "Managing the It Aspects of a Large-Scale Divestiture," Intel.

Applegate, L. M., Watson, E., and Vatz, M. 2007. *Royal Dsm N. V.: Information Technology Enabling Business Transformation.* Boston, MA: Harvard Business School.

Benbya, H., Leidner, D. E., and Preston, D. 2019. "Mis Quarterly Research Curation on Information Systems Alignment Research," in: *MIS Quarterly Research Curations*.

Benitez, J., Ray, G., and Henseler, J. 2018. "Impact of Information Technology Infrastructure Flexibility on Mergers and Acquisitions," *MIS quarterly* (42:1), pp. 25-44.

Böhm, M. 2015. "It-Bezogene Herausforderungen Im Kontext Von Unternehmensdesinvestitionen: Ein Erklärungsansatz Für Den It-Desintegrationserfolg," in: *Fakultät für Informatik*. München: Technische Universität München.

Böhm, M., Nominacher, B., Fähling, J., Leimeister, J. M., Yetton, P., and Krcmar, H. 2010. "It Challenges in M&a Transactions–the It Carve-out View on Divestments," in: *International Conference on Information Systems*. St Louis.

Booth, A., and Geller, G. (eds.). 2008. *Wired for Winning? Managing It Effectively in M&A*. New York, NY: Deloitte.
Brady, T., and Davies, A. 2014. "Managing Structural and Dynamic Complexity: A Tale of Two Projects," *Project Management Journal* (45:4), pp. 21-38.
Brauer, M. 2006. "What Have We Acquired and What Should We Acquire in Divestiture Research? A Review and Research Agenda," *Journal of Management* (32:6), pp. 751–785.
Brown, C. V., and Magill, S. L. 1994. "Alignment of the Is Functions with the Enterprise: Toward a Model of Antecedents," *MIS quarterly* (18:4), pp. 371-403.
Brown, C. V., and Magill, S. L. 1998. "Reconceptualizing the Context-Design Issue for the Information Systems Function," *Organization science* (9:2), pp. 176-194.
Broyd, R., and Storch, B. 2006. "Carve to Measure," in *Handbuch Mergers & Acquisitions Management,* B.W. Wirtz (ed.). Wiesbaden: Gabler Verlag, pp. 1221-1237.
Buchta, D., Eul, M., and Schulte-Croonenberg, H. 2009. *Strategisches It-Management: Wert Steigern, Leistung Steuern, Kosten Senken*, (3 ed.). Wiesbaden: Gabler Verlag.
Busquets, J. 2015. "Discovery Paths: Exploring Emergence and It Evolutionary Design in Cross-Border M&As. Analysing Grupo Santander's Acquisition of Abbey (2004–2009)," *European Journal of Information Systems* (24:2), pp. 178-201.
Capron, L., Dussauge, P., and Mitchell, W. 1998. "Resource Redeployment Following Horizontal Acquisitions in Europe and North America, 1988-1992," *Strategic Management Journal* (19:7), pp. 631-661.
Chakravarthy, B., and Henderson, J. 2007. "From a Hierarchy to a Heterarchy of Strategies: Adapting to a Changing Context," *Management Decision* (45:3), pp. 642-652.
Christensen, J. F. 1998. "The Dynamics of the Diversified Corporation and the Role of Central Management of Technology." Danish Research Unit for Industrial Dynamics Working Paper No. 98-4.
Ciborra, C., Braa, K., Cordella, A., Dahlbom, B., Hepsø, V., Failla, A., Hanseth, O., Ljungberg, J., and Monteiro, E. 2000. *From Control to Drift: The Dynamics of Corporate Information Infrastructures*. Oxford University Press on Demand.
Coltman, T., Tallon, P., Sharma, R., and Queiroz, M. 2015. "Strategic It Alignment: Twenty-Five Years On," *Journal of Information Technology* (30:2), pp. 91-100.
Cresap, P., Singh, V., Bradford, K., McCracken, T., and Houston, M. 2020. "Stranded by It (in a Divestiture)," in: *LinkedIn Post*.
Cristo, D. A., and Falk, R. W. 2006. "Spinoffs and Carveouts: Some Factors Leading to Successful Divestiture," *Competition Forum*: American Society for Competitiveness, p. 331.
Deloitte. 2016. "Think Logically About "Logical Separation" ", Deloitte.
Desai, V. 2018. "Carve-Outs Vs. M&A," in: *LinkedIn Post*.
Du, K. 2015. "Parenting New Acquisitions: Acquirers' Digital Resource Redeployment and Targets' Performance Improvement in the U.S. Hospital Industry," *Information Systems Research* (26:4), pp. 829-844.
Du, K., and Tanriverdi, H. 2010. "The Performance Effects of Transitional It Services in Corporate Spin-Offs," *International Conference on Information Systems (ICIS)*, St. Louis, p. Paper 248.
Du, K., and Tanriverdi, H. 2014. "Managing Information Technology under Extreme Organizational Disequilibrium: The Case of Corporate Spinoffs," in: *International Conference of Information Systems (ICIS),* M. Myers and D.W. Straub (eds.). Auckland, New Zealand: AIS.
Dudek, K., Krestyn, J., and Viraphan, P. 2020. "It Transitional Service Agreements (It Tsas): How Much Are They Needed?," Deloitte AG.
Eisenhardt, K. M., and Bourgeois, L. J. 1988. "Politics of Strategic Decision Making in High-Velocity Environments: Toward a Midrange Theory," *Academy of management journal* (31:4), pp. 737-770.
EY. 2019. "Will You Set the Divestment Pace, or Try to Keep up with It?," EY Financial Services.
Fähling, J., Böhm, M., Leimeister, J. M., Yetton, P., and Krcmar, H. 2010. "Managing the It Carve-out in a Sbu Divestment," in: *18th European Conference on Information Systems (ECIS)*. Pretoria, South Africa: Association for Information Systems.
Fontaine, A. 2012. "Information Technology Implications in Corporate Mergers, Acquisitions, and Demergers." Emory University.
Fubini, D., Park, M., and Thomas, K. 2013. "Profitably Parting Ways: Getting More Value from Divestitures," McKinsey & Company.
Gartner. 2019. "Gartner Says the Average Time to Close an M&a Deal Has Risen More Than 30 Percent in the Last Decade." Arlington, Va.
Gerow, J. E., Grover, V., Thatcher, J., and Roth, P. L. 2014. "Looking toward the Future of It–Business Strategic Alignment through the Past," *MIS quarterly* (38:4), pp. 1159-1186.
Gillingham, I., and Stimpson, M. 2008. "A Way to Design and Manage Tsas to Achieve a Fast and Clean Separation," in: *Deloitte Perspectives*. Deloitte.
Gregor, S. 2006. "The Nature of Theory in Information Systems," *MIS Quarterly* (30:3), pp. 611-642.
Gregory, R. W., and Piccinini, E. 2013. "The Nature of Complexity in Is Projects and Programmes," in: *ECIS 2013*

Hanelt, A., Firk, S., Hildebrandt, B., and Kolbe, L. M. 2021. "Digital M&a, Digital Innovation, and Firm Performance: An Empirical Investigation," *European Journal of Information Systems* (30:1), pp. 3-26.

Harroch, R. D., Lipkin, D. A., and Smith, R. V. 2018. "What You Need to Know About Mergers & Acquisitions: 12 Key Considerations When Selling Your Company " in: *Forbes*.

Hedman, J., and Sarker, S. 2015. "Information System Integration in Mergers and Acquisitions: Research Ahead," (24:2), pp. 117-120.

Henderson, J. C., and Venkatraman, N. 1993. "Strategic Alignment: Leveraging Information Technology for Transforming Organizations," *IBM Systems Journal* (32:1), pp. 4-16.

Henningsson, S., and Carlsson, S. 2011. "The Dysiim Model for Managing Is Integration in Mergers and Acquisitions," *Information Systems Journal* (21:5), pp. 441-476.

Henningsson, S., and Kettinger, W. J. 2016. "Understanding Information Systems Integration Deficiencies in Mergers and Acquisitions: A Configurational Perspective," *Journal of Management Information Systems* (33:4), pp. 942-977.

Henningsson, S., Yetton, P. W., and Wynne, P. J. 2018. "A Review of Information System Integration in Mergers and Acquisitions," *Journal of Information Technology* (33:4), pp. 255-303.

Hirschheim, R., and Sabherwal, R. 2001. "Detours in the Path toward Strategic Information Systems Alignment," *California management review* (44:1), pp. 87-108.

Hsu, J., and Chen, E. T. 2006. "The Impact of Mergers and Acquisitions on Information Systems: A Case of a Software Industry Acquisition," *Communications of the IIMA* (6:1), p. 6.

Hu, N., Li, L., Li, H., and Wang, X. 2020. "Do Mega-Mergers Create Value? The Acquisition Experience and Mega-Deal Outcomes," *Journal of Empirical Finance* (55), pp. 119-142.

Jain, R. P., and Ramesh, B. 2015. "The Roles of Contextual Elements in Post-Merger Common Platform Development: An Empirical Investigation," *European Journal of Information Systems* (24:2), pp. 159-177.

Johnston, K., and Yetton, P. W. 1996. "Integrating Information Technology Divisions in a Bank Merger - Fit, Compatibility and Models of Change," *Journal of Strategic Information Systems* (5:3), pp. 189-211.

Joy, J. 2018. *Divestitures and Spin-Offs: Lessons Learned in the Trenches of the World's Largest M&a Deals*. Springer.

Lee, G., and Xia, W. 2002. "Development of a Measure to Assess the Complexity of Information Systems Development Projects," in: *International Conference of Information Systems*. Barcelona, Spain: p. 8.

Leimeister, J. M., Böhm, M., and Yetton, P. 2012. "Managing It in a Business Unit Divestiture," *Management Information Systems Quarterly Executive* (11:1), pp. 37-48.

Leimeister, S., Leimeister, J. M., Fähling, J., and Krcmar, H. 2008. "Exploring Success Factors for It Carve out Projects," *16th European Conference on Information Systems (ECIS)*, Galway, Ireland, pp. 1764-1776.

Luu, A., and Thomsen, J. 2019. "Solving the Carve-out Conundrum," McKinsey & Company.

Makadok, R. 2010. "The Interaction Effect of Rivalry Restraint and Competitive Advantage on Profit: Why the Whole Is Less Than the Sum of the Parts," *Management science* (56:2), pp. 356-372.

Makadok, R. 2011. "Invited Editorial: The Four Theories of Profit and Their Joint Effects," *Journal of Management* (37:5), pp. 1316-1334.

Markus, M. L. 2001. "Reflections on the Systems Integration Enterprise," *Business Process Management Journal* (7:3).

Mehta, M., and Hirschheim, R. 2007. "Strategic Alignment in Mergers and Acquisitions: Theorizing Is Integration Decision Making," *Journal of the Association for Information Systems* (8:3), pp. 143-174.

Müller, H. 2006. "Demerger-Management," in *Handbuch Mergers & Acquisitions Management,* B.W. Wirtz (ed.). Wiesbaden: Gabler Verlag, pp. 1186-1207.

Pflügler, C., Böhm, M., and Krcmar, H. 2015. "Coping with It Carve-out Projects-Towards a Maturity Model," in: *Wirtschaftsinformatik*. pp. 1664-1678.

Powell, T. C., and Dent‐Micallef, A. 1997. "Information Technology as Competitive Advantage: The Role of Human, Business, and Technology Resources," *Strategic management journal* (18:5), pp. 375-405.

Quaadgras, A., Weill, P., and Ross, J. W. 2014. "Management Commitments That Maximize Business Impact from It," *Journal of Information Technology* (29:2), pp. 114-127.

Queiroz, M. 2017. "Mixed Results in Strategic It Alignment Research: A Synthesis and Empirical Study," *European Journal of Information Systems* (26:1), pp. 21-36.

Queiroz, M., Tallon, P. P., Coltman, T., Sharma, R., and Reynolds, P. 2020. "Aligning the It Portfolio with Business Strategy: Evidence for Complementarity of Corporate and Business Unit Alignment," *The Journal of Strategic Information Systems* (29:3), p. 101623.

Ratzer, P., Weber, J., Krcmar, H., Weiss, D., Brinkmann, M., and Böhm, M. 2014. "Dear Cfo, Why It Does Matter within M&a Transactions: Insights & Recommendations," Deloitte.

Reich, B. H., and Benbasat, I. 1996. "Measuring the Linkage between Business and Information Technology Objectives," *MIS quarterly* (20:1), pp. 55-81.

Reich, B. H., and Benbasat, I. 2000. "Factors That Influence the Social Dimension of Alignment between Business and Information Technology Objectives," *MIS quarterly* (24:1), pp. 81-113.

Reynolds, P. J., and Yetton, P. W. 2015. "Aligning Business and It Strategies in Multi-Business Organizations," *Journal of Information Technology* (30:2), pp. 101-118.
Robbins, S. S., and Stylianou, A. C. 1999. "Post-Merger Systems Integration: The Impact on Is Capabilities1both Authors Have Contributed Equally to This Research1," *Information & Management* (36:4), pp. 205-212.
Rolland, K. H., Mathiassen, L., and Rai, A. 2018. "Managing Digital Platforms in User Organizations: The Interactions between Digital Options and Digital Debt," *Information Systems Research* (29:2), pp. 419-443.
Ross, J. W., Weill, P., and Robertson, D. 2006. *Enterprise Architecture as Strategy: Creating a Foundation for Business Execution*. Harvard business press.
Slaughter, S. A., Levine, L., Ramesh, B., Pries-Heje, J., and Baskerville, R. 2006. "Aligning Software Processes with Strategy," *Mis Quarterly*), pp. 891-918.
Stylianou, A. C., Jeffries, C. J., and Robbins, S. S. 1996. "Corporate Mergers and the Problems of Is Integration," *Information & Management* (31), pp. 203-213.
Tallon, P., Queiroz, M., Coltman, T. R., and Sharma, R. 2016. "Business Process and Information Technology Alignment: Construct Conceptualization, Empirical Illustration, and Directions for Future Research," *Journal of the Association for Information Systems* (17:9), p. 3.
Tallon, P. P. 2007. "A Process-Oriented Perspective on the Alignment of Information Technology and Business Strategy," *Journal of Management Information Systems* (24:3), pp. 227-268.
Tanriverdi, H., and Du, K. 2009. "Disintegrating Information Technology in Corporate Divestures: Implications for Regulatory Compliance Risks and Costs," *International Conference on Information Systems* H. Chen and S. Slaughter (eds.), Phoenix, Arizona, USA: Association for Information Systems.
Tanriverdi, H., and Uysal, V. B. 2015. "When It Capabilities Are Not Scale-Free in Merger and Acquisition Integrations: How Do Capital Markets React to It Capability Asymmetries between Acquirer and Target?," *European Journal of Information Systems* (24:2), pp. 145-158.
Thomas, T., Swinteck, B., and Altman, T. 2017. "Day One Readiness: Enabling Business Continuity through Effective Execution of Complex Transactions," in: *Deloitte Perspectives*.
Thomson ONE. 2021. "Mergers & Acquisitions Database," Refinitiv (ed.).
Tiwana, A., and Konsynski, B. 2010. "Complementarities between Organizational It Architecture and Governance Structure," *Information Systems Research* (21:2), pp. 288-304.
Toppenberg, G., Shanks, G., and Henningsson, S. 2015. "How Cisco Systems Used Enterprise Architecture Capability to Sustain Acquisition-Based Growth," *MIS Quarterly Executive* (14:4), pp. 151-168.
van Es, R. V., Mehta, S., and Albert, G. 2014. "Making Transitional Service Agreements Work," Accenture.
Weber, R. 2003. "Theoretically Speaking," *Management Information Systems Quarterly (MISQ)* (27:3), pp. iii-xii.
Weber, R. 2012. "Evaluating and Developing Theories in the Information Systems Discipline," *Journal of the Association for Information Systems* (13:1), pp. 1-30.
Weill, P., and Ross, J. W. 2004. *It Governance: How Top Performers Manage It Decision Rights for Superior Results*. Harvard Business Press.
Wiedemann, A., Wiesche, M., Gewald, H., and Krcmar, H. 2020. "Understanding How Devops Aligns Development and Operations: A Tripartite Model of Intra-It Alignment," *European Journal of Information Systems* (29:5), pp. 458-473.
Wijnhoven, F., Spil, T., Stegwee, R., and Fa, R. T. A. 2006. "Post-Merger It Integration Strategies: An It Alignment Perspective," *The Journal of Strategic Information Systems* (15), pp. 5-28.
Williamson, O. E. 1996. "Transaction Cost Economics and the Carnegie Connection," *Journal of Economic Behavior & Organization* (31:2), pp. 149-155.
Xia, W., and Lee, G. 2005. "Complexity of Information Systems Development Projects: Conceptualization and Measurement Development," *Journal of management information systems* (22:1), pp. 45-83.
Yetton, P. W., Henningsson, S., and Bjørn-Andersen, N. 2013. ""Ready to Acquire": The It Resources Required for a Growth-by-Acquisition Business Strategy," *MIS Quarterly Executive* (12:1), pp. 19-35.
Zhang, M., Chen, H., and Lyytinen, K. 2020. "Validating the Coevolutionary Principles of Business and Is Alignment Via Agent-Based Modeling," *European Journal of Information Systems*), pp. 1-16.