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THE PERFORMANCE EFFECTS OF TRANSITIONAL IT SERVICES IN CORPORATE SPIN-OFFS

Completed Research Paper

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Abstract

In corporate spin-offs, spun-off units pursue two major objectives: separating and restructuring their business for independent operation; and retaining business continuity and minimizing operational disruptions. In trying to balance the conflicting demands of these objectives, spun-off units often turn to “transitional IT services” provided by their parents. However, the business value of the transitional IT services is not understood well yet. In this study, we examine different impacts of transitional IT services at different stages of corporate spin-offs. Our study population covers corporate spin-offs in which spun-off units were set up as independent public firms during 1999-2009 timeframe. We find that longer transitional IT services prolong the time-to-close spin-off deals and negatively affect market valuation of the spun-off units at the first day of trading. But longer transitional IT services positively affect operating performance of the spun-off units. They also help mitigate negative effects of business restructuring on operating performance.

Keywords: Spin-offs, transitional IT services, market valuation of IT, restructuring

Introduction

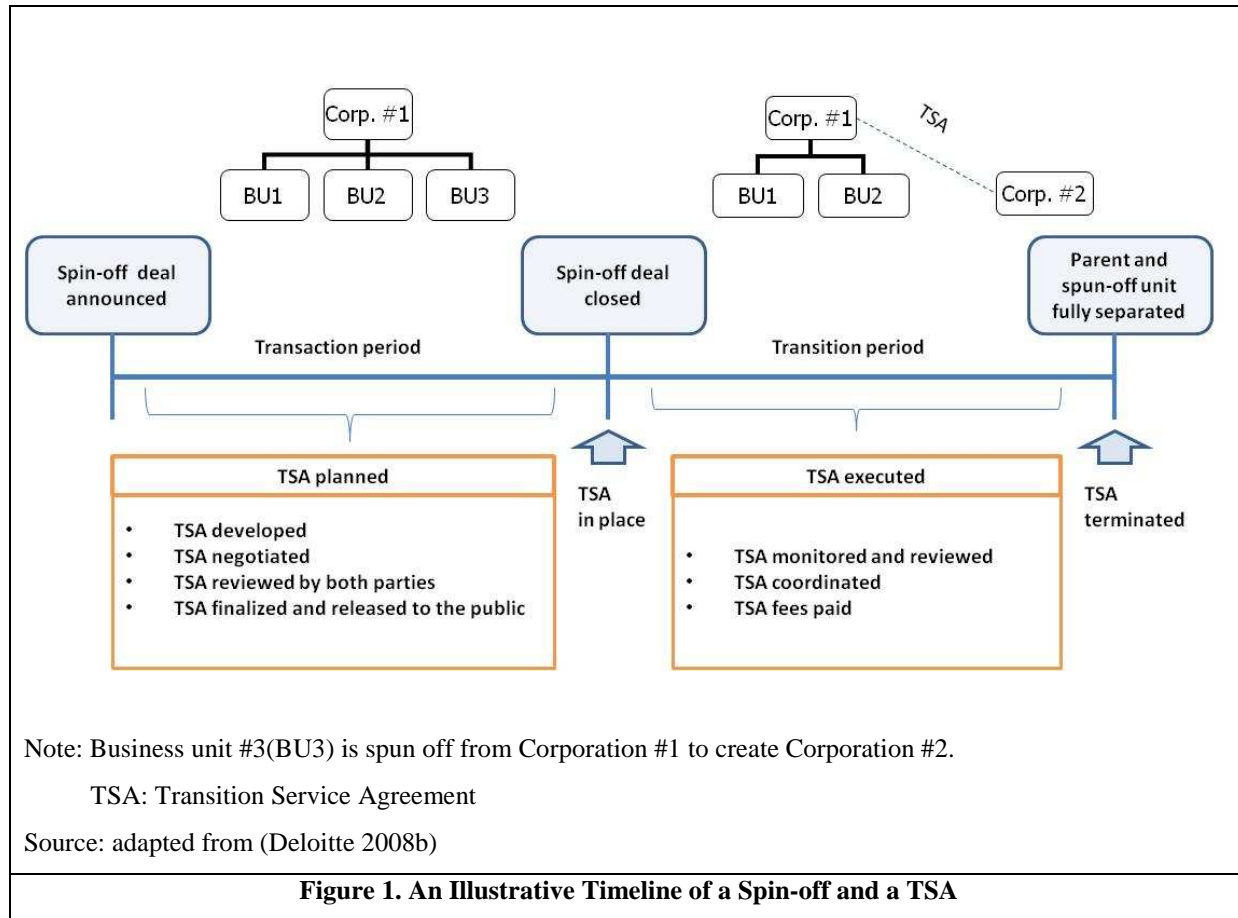
"The lotus root may be severed, but its fibered threads are still connected"- Chinese proverb

A corporate spin-off is a financial deal in which a business unit of a corporate parent is to be separated and set up as an independent firm (Bergh et al. 2008; Desai and Jain 1999). Between the date that the parent makes the spin-off decision and the date the deal legally closes, the spun-off unit has to make arrangements to become a standalone firm that operates and trades independently. This is a highly compressed timeframe. It leaves the spun-off unit only a few months to purposefully sever connections to parent's shared services such as IT, marketing, accounting, and human resource services. However, as the Chinese proverb in the opening suggests, the spun-off unit may not be able to cut all connections to its parent. Many fibered threads, such as shared IT applications and data, may have to remain connected to the parent for an extended period of time until the spun-off unit figures out how to develop substitutes for them. This transition period can be characterized as a state of disequilibrium in which business strategies and resources of the unit are disrupted, but new strategies and resources have not yet emerged or settled. Most of existing studies on business value of IT (e.g., Barua et al. 1995; Kohli and Devaraj 2003; Oh and Pinsonneault 2007) focus on investigating IT payoffs during relatively stable periods of business operations. The business value of IT during unstable periods is not understood yet. In addition, managing IT during unstable periods presents unique challenges different from those in stable periods. There is shortage of research on the role of IT during unstable periods of business operations such as the transition period in corporate spin-offs.

In this study, we begin to address this gap by focusing on IT management dilemmas faced by spun-off units during spin-offs. We examine how they balance the conflicting demands of restructuring and transforming their business for independent operation while at the same time running the existing business operations without major disruptions. In this period, most spin-offs turn to "transitional IT services" from their parents. The advantage of transitional IT services is that they support existing business operations and give the new firm more time and flexibility in figuring out how to restructure its business and IT for independent operation. As for disadvantages, reliance on transitional services could prolong the time-to-close the deal and investors may not react favorably to a spun-off firm which keeps relying on its parent for support functions of its business. To generate new knowledge on business value of transitional IT services in corporate spin-offs, we examine the role of such services at each stage of a spin-off and address the following four questions: (1) how does the duration of transitional IT services affect the time-to-close the spin-off deal? (2) how does the duration of transitional IT services affect the market valuation of the spun-off unit at the time of the deal close? (3) how does the duration of transitional IT services affect the operational performance of the spun-off unit after the spin-off? and (4) how does the duration of transitional IT services affect the performance outcomes of business restructuring activities of the spun-off unit after the spin-off?

Timeline of transitional IT services in corporate spin-offs

Transitional services during a corporate spin-off are governed by transitional services agreements or TSAs. Figure 1 illustrates the typical timeline of a spin-off and a TSA. When a parent announces its intention to separate and set up a business unit as an independent firm, the clock starts ticking. The parent and the unit usually have only a few months to close the deal and achieve legal separation. Practitioner research suggests that it takes an average of 115 days to close large transactions over \$1 billion (Deloitte 2008b). Since it is usually not feasible to separate IT or build new IT services in such a short period of time, the two parties plan and develop a TSA so that the parent can continue providing IT services to the spun-off entity as if the parent were an outsourcing vendor. But unlike an outsourcing vendor, the parent has no interest in providing IT services to the spun-off unit. It usually seeks to get off the TSA as soon as possible and focus on serving its own businesses. Even if the parent has the best of intentions to serve the spun-off unit, it may lack no expertise and capabilities to serve a separate firm. Lastly, a TSA is a time-bounded contract. Neither party has expectation for repeat business. By the time the transition period is over and TSA is terminated, the spun-off firm needs to set up its own IT services. Similarly, if the spun-off unit cannot easily separate non-IT functions such as finance, accounting, and human resource management, it can develop separate TSAs to receive those services from the parent.



Hypotheses Development

Research question-1: how does the duration of transitional IT services affect the time-to-close the spin-off deal?

In figure 1, during the transaction period between the announcement of a spin-off deal and the deal close, the parent firm and the unit to be spun-off (BU3) need to negotiate the main separation agreement and its ancillary contracts including TSAs; prepare pro forma financial statements for the unit; apply for regulatory approval; and disentangle the unit (Gole and Hilger 2008). The transaction timeline is driven mainly by mutual agreements on the deal structure and the approval of the contracts. There is usually not enough time during the transaction period to plan for IT implementation issues, let along the acquisition of the IT resources needed for self support (Deloitte 2008a). Thus, a TSA becomes necessary to allow the spun-off unit to use the parent firm's IT resources in a transition period after the spin-off when it is architecting its own IT platform. A challenge is to decide on the duration of IT services. It is in the interest of the parent to minimize this duration. The spun-off unit may need a longer period to gain time to build its own IT platform. However, longer transitional IT services could prolong the time-to-close the deal for two reasons.

First, continuing IT interdependence between the parent and the spun-off unit after a spin-off will raise IT security and regulatory compliance concerns for both parties. Because the parent and the spun-off firm will become independent legal entities, continuing to share common IT networks and applications increases the risks of unauthorized access to each other's sensitive information. The parent firm will have to create logical compartments to isolate the two firms in the same physical IT platform (Gartner 2005; Leimeister et al. 2008). Such logical separation has to be achieved by the deal close date. Longer transitional IT services imply higher level of IT

resource sharing between the two parties, more effort to plan the separation, and hence, longer time to close the deal. In addition, after the enactment of the Sarbanes-Oxley Act (SOX), fiduciary responsibilities are scrutinized closely. Unlike an outsourcing service provider, the parent firm may not have the capabilities to serve another company with a SOX compliant environment, which increases the preparation workload of both parties and further prolong the time-to-close the deal.

Second, designing governance mechanisms over the post-spin-off relationship of the two parties is an arduous task. Unlike outsourcing services, transitional services are negotiated in a parent-subsidiary context rather than a market exchange context. Without interest in serving a separate firm and expectation of repeat business, the parent firm usually considers the provision of transitional IT services to be a nuisance and a distraction (Deloitte 2008b). Thus, the spun-off unit needs much more negotiation, coordination, and lobbying efforts to get longer transitional IT services. In addition, longer transitional IT services imply that prior to the spin-off the reliance of the spun-off firm on its parent's IT platform is high. Dismantling tight IT integration and migrating into a new IT platform are complex and risky IT projects, which need close cooperation between the spun-off unit and the parent after the spin-off. Governing relationships with high asset specificity, high task uncertainty, and high task complexity entails more extensive planning (Chen and Bharadwaj 2009; Poppo and Zenger 2002). Moreover, because transitional IT services are time-bounded, the parent firm is likely to behave opportunistically after the spin-off so there is need for more planning time to develop more explicit contract-based governance mechanisms (Reuer and Arino 2007). Anderson and Dekker (2005) show that more extensive contracts need more time to prepare and get mutual agreement. Last, designing governance mechanisms over transitional services entails the involvement of more external expertise. For example, the design of contractual clauses needs to involve contract design capabilities among appropriate groups of personnel (Argyres and Mayer 2007), but in a spin-off case, because a spin-off is a rare event, firms usually lack in-house expertise for designing intensive IT services and associated governance mechanisms. They may have to hire external consultants who have sufficient spin-off experience. The extra expertise requirements can also lengthen the time to close the deal. Thus, we hypothesize:

H1: Longer transitional IT services prolong the time-to-close corporate spin-off deals.

Research question-2: how does the duration of transitional IT services affect market valuation of the spun-off unit at the time of the deal close?

The spun-off firm will start trading as an independent firm at the deal close date and be valued by capital markets. Market valuation of a spun-off unit is one of the most frequently studied questions in the spin-off literature (e.g., Burch and Nanda 2003; Desai and Jain 1999; Krishnaswami and Subramaniam 1999). According to this literature, capital markets do not have access to as much information about units of a firm as the corporate parent of the units. This information asymmetry between the parent and markets could lead to undervaluation of the parent's units (Bergh et al. 2008; Krishnaswami and Subramaniam 1999). If the parent feels that a business unit is undervalued because the capital markets do not realize its true growth potential, it will choose to spin it off as a separate entity. Since the spun-off unit will release more information to capital markets and reduce the information asymmetry, its valuation is expected to go up (Bergh et al. 2008).

However, if the spun-off unit does not rapidly become operationally independent and continues to use transitional IT services from the parent, the spin-off transaction will preserve some of the information asymmetry rather than reduce it. A long transition IT service will signal to capital markets that the spun-off firm has not tackled the separation challenge yet and just postpones it. There is not sufficient information about the capability of the new firm to survive and grow independently. In addition, the presence of transitional IT services will signal that future business operations of the firm remain uncertain since the supporting functions are not ready yet. For example, when Discover was spun off from Morgan Stanley in 2007, Morgan Stanley agreed to continue supporting Discover's IT, accounting, HR, and other corporate functions for 18 months. In its prospectus, Discover disclosed the risks and uncertainties created by the delays of its operational independence as follows: "*Our ability to operate our business effectively may suffer if we do not, quickly and cost effectively, establish our own financial, administrative and other support functions to operate as a stand-alone company...after these agreements [TSAs] with Morgan Stanley expire or are terminated, we may not be able to replace these services at all or obtain these services at acceptable prices and terms*" (Discover Financial Services 2007). When information asymmetry continues, investors may underprice the spun-off firm as a result of adverse selection (Michaely and Shaw 1994).

Capital markets incorporate IT of a firm into the firm's market valuation (Dehning et al. 2003; Dos Santos et al. 1993; Im et al. 2001). In the context of spin-offs, IT is crucial for the spun-off firm to both retain business continuity and enable strategic renewal. Thus, we expect that capital markets take into account a spun-off firm's IT in valuating it. However, the firm's reliance on transitional IT services signals to the market that the spun-off firm has not yet been able to operate independently since it has not become IT self-sufficient. The uncertainty about the spun-off firm's future IT and business operations will likely reduce the valuation of the firm. Thus:

H2: *Longer transitional IT services negatively affect market valuation of spun-off firms at the first day of trading*

Research question-3: How does the duration of transitional IT service affect the operating performance of the spun-off unit?

During the transition period, a spun-off firm needs to build its new IT platform. Compared with IT projects undertaken during periods of relative stability, IT projects during the spin-off context face three unique challenges. First, they are confronted with conflicting goals of short-term operational stability and long-term strategic renewal and flexibility. The spun-off firm needs to minimize spin-off disruptions and stabilize its business operations to survive and continue its operations. At the same time, it needs to restructure itself for future growth and profitability. However, long-term strategies of the unit have not necessarily emerged yet. So, strategic flexibility of the new IT platform is vital in case the firm needs to change its strategic direction. Second, IT projects in spin-offs are usually conducted under extreme time pressures. While the IT platform of an established firm develops over many years, the spun-off unit is expected to develop an equivalent one within a few months. Finally, spun-off firms are also constrained by tight budgets, not just for IT but for all other functions. An illustrative case in point is Dephi's spin-off of its automotive interior business, Inteva. The CIO of Inteva, who was appointed only six months before the spin-off, states: "My task was to determine where we wanted to go 'after we grew up'. One thing was certain: We were going to be a much smaller organization than we had been before the spin-off. Yet despite our size, we still faced the challenges of a global organization... To complicate matters, the Transition Service Agreement that was being negotiated gave Inteva just twelve months to migrate the entire infrastructure and application environment away from the former parent...In addition, I was challenged by our CEO to reduce IT costs dramatically (dropping from two percent of revenue to less than one percent)"(Hodges 2008). We propose that transitional IT services can address these challenges and improve performance through two mechanisms: providing option value and reducing time compression diseconomies.

Transitional IT services can provide option value by deferring the capital investments that a brand new IT platform requires until after the spin-off. Because both the strategy and the operational model of a spun-off firm are likely to be reshaped after its independence, it is hard to foresee all the IT requirements and make *ex ante* IT investments. Thus, transitional IT services provide the firm with the "value of waiting to invest"(McDonald and Siegel 1986). When environment is uncertain, and investment is irreversible, the option to hold investment until the arrival of new information for decision making becomes valuable (Majd and Pindyck 1987). IT investments are usually considered irreversible because IT development and implementation expenditures cannot be easily retrieved when the environment changes (Taudes et al. 2000). To create the option to adapt, a firm can choose to invest in a general-purpose IT platform upon which a family of applications can be deployed later (Fichman 2004; Taudes et al. 2000). However, such IT platform usually demands intensive capital investment and long implementation time, which are usually absent during a spin-off period. Using transition IT services provides an alternative approach to "purchase" the option of deferring investment. For example, in Inteva's case above, the CIO probably cannot make any substantial IT commitments before the spin-off because the desired end states of Inteva's business and IT are indeterminate yet. During the 12 month transitional service period, the CIO and other business executives can make sense of the new environment, properly reposition the firm, and optimize the firm's resource reconfiguration. IT investments can then be made after business needs become stable. In addition, a spun-off firm usually faces resource constraints. Postponed IT investments can release the scarce capital, human resource, and management attention for other urgent tasks during the transition period.

Transitional IT services also reduce the time compression diseconomies inherent in IT development. The time compression diseconomy refers to the fact that time is a nonsubstitutable factor in obtaining or building certain resources (Dierickx and Cool 1989). Building IT resources is subject to strong time compression diseconomies (Bharadwaj 2000). For example, if an ERP application takes 10 consultants and two years to implement, doubling the number of consultants to 20 will not necessarily reduce the implementation time to one year with the same implementation quality. During a spin-off, the spun-off firm faces great time pressure to reverse years of IT

integration with its parent firm. Transitional IT services can relieve this time pressure and provide more time to the spun-off firm to build new IT platform that meets its emerging strategic and operational needs and subsequently improve its operating performance. Thus, we hypothesize:

H3: *Longer transitional IT services are positively associated with operating performance of spun-off firms*

Research question-4: how does the duration of transitional IT services affect the performance outcomes of business restructuring activities of the spun-off unit after the spin-off?

Under the governance of a parent firm, a business unit is subject to many constraints of a large firm. For example, individual units may bear high administrative costs as a part of a large parent especially when business environments are uncertain and the parent is highly diversified (Bergh and Lawless 1998). The corporate-wide compensation system may not adequately incentivize divisional managers (Seward and Walsh 1996; Woo et al. 1992). The spin-off event thus gives the unit an opportunity to break free from the constraints of the parent, renew its strategies, and realign itself with its competitive environment. On the other hand, the spun-off unit will inherit culture, routines, norms, and structures from its parent. These elements were institutionalized in a large and stable firm and will create inertia for renewal and restructuring of a relatively smaller and younger spun-off firm. From either perspective, the spun-off firm needs to restructure itself to release its growth potential as an independent entity. To capture the extent of restructuring undertaken by the spun-off unit, we use the *business restructuring intensity* construct and define it as the extent to which a firm changes its organizational structure, industrial positioning, business processes, scale, workforce, geographic presence, and other organizational parameters.

Organizational restructuring increases the risk of disruption in business operations. Established and stable organizations are characterized by the reliability that they can repeatedly deliver their products or services on time and with promised quality, and the accountability that they have formulated rational and internally consistent rules and procedures for their actions (Hannan and Freeman 1984). During the restructuring period, however, a spun-off firm may lack these two attributes. Because new business rules and procedures are not set up or institutionalized, spun-off firms may produce products and services with greater variance of quality. They are also likely to make inconsistent decisions due to lack of guiding principles and clear strategic objectives. In addition, during the restructuring period, more resources have to be allocated to non-recurring activities rather than normal business operations. The outputs of business operations, reflected in operating performance, will likely be reduced.

Empirical studies on organizational change found that restructuring would ultimately improve performance due to a better fit with environment (Haveman 1992; Kelly and Amburgey 1991), but relatively less attention has been paid to the performance during the restructuring period. One exception is the study by McKendrick and his colleague (2009), who found that, in the period directly after the spin-off, the parent firm will experience disruption in its innovation rate, although it will ultimately recover from it. In the post-acquisition context, Barkema and Schijven (2008) found a similar pattern that acquiring firms do not necessarily benefit from their acquisitions immediately, and synergic value of acquisitions can be unleashed only after a restructuring period. Similarly, a spun-off firm may experience temporal performance deterioration during the restructuring period. Further, from a human resource perspective, restructuring during the spin-off often implies downsizing of the workforce to fit the shrunk business scale. Employees experiencing downsizing will worry about their job security and become less productive, narrow-minded, and self-absorbed (Cascio 1993). In the accounting literature, restructuring has also been found to weaken firms' internal control systems and thus expose them to higher risks of undesirable employee behaviors and distorted business processes. (Ashbaugh-Skaife et al. 2007; Doyle et al. 2007). Thus, we hypothesize:

H4: *Business restructuring intensity is negatively associated with operational performance of spun-off firms*

Utilizing transitional IT services from the parent can mitigate the potential negative effects of business restructuring and accelerate the realization of its benefits. First, transitional IT services can enable higher restructuring flexibility. Although a spin-off event offers a window of opportunity to renew the spun-off firm's legacy systems and the institutionalized routines (Tyre and Orlikowski 1994), the spun-off firm may not have the flexibility to do so due to the pressure of business continuity and resource constraints. Survival is always the top priority for any newly established firm, so a new firm tends to avoid long horizon investments and pursue short-term benefits (Souder and Shaver forthcoming). Transitional IT services relieve a spun-off firm's concerns about business continuity and allow it to experiment with its restructuring options with greater flexibility. One illustrative case is Birds Eye, a frozen food company which was spun off from Unilever in 2006. The CIO of Birds Eye states: "*We have been dependent on Unilever for back office and systems and that has affected the ways we do things. Now we are a medium-sized*

business and to grow it will mean a very different environment...it was very exciting to build [the IT platform] from scratch, to build my own destiny with no horrible legacy that we all spend our careers having to work with". A twelve-month-long IT services commitment from Unilever provides Birds Eye the time and flexibility it needed to restructure its business and IT operations (Chillingworth 2009).

In addition, a well-functioning IT infrastructure can ensure the minimum requirement for effective business restructuring. Business restructuring demands intensive communication and coordination work, so a fundamental communication platform must be readily available. In the business process redesign context, Broadbent, Weill, and Clair (1999) find that a basic level of IT infrastructure capability is needed for all firms to redesign their business processes. Examples of necessary infrastructure include firm-wide communication network, emails, data storage and transmission, security, and other basic IT functions. Then, because organizational structure and business routines are usually embedded in IT applications, organizational changes become technology-mediated such that changes in business design have to be configured into IT applications before it can take into effects (Volkoff et al. 2007). Higher level quality of IT infrastructure can help firms implement extensive changes over relatively short time frames (Broadbent et al. 1999). A spun-off firm may have to rely on transitional IT services from its parent for such IT infrastructure needs. In addition, data analytics can be crucial for the spun-off firm to make informed decisions during restructuring. However, it usually takes a long time for a spun-off firm to migrate its historical data to its own IT environment. A transitional IT service from the parent can allow the spun-off firm to have real time access to data and analytical tools to support decision making. So, we hypothesize:

H5: Longer transitional IT services mitigate the negative impacts of business restructuring intensity on operational performance of spun-off firms

Method

Sample and Data

Our study population includes all spin-offs announced between 1999 and 2009 and tracked by the SDC Platinum, a financial transaction database maintained by Thomson Reuters. We selected our sample based on the following criteria: (1) the spin-off deal is closed; (2) the spun-off firm is operating in the United States; (3) the spun-off firm is publicly traded; (4) the spin-off represents a 100% stock distribution. The fourth criterion ensures that the parent and the spun-off firm become completely independent after the deal close. These criteria produce an initial sample of 152 spin-offs. None of the parents are private equity firms.

For each spun-off firm in the sample, we retrieved its security registration filings (usually form 10-12B, 8-A12B, or S-1) and material events announcement filings (form 8-K) around the spin-off period from SEC's Edgar database. Those filings were skimmed to identify possible transitional arrangements between the spun-off firm and its parent. Spun-off firms usually disclose their TSAs¹ or describe the contents of TSAs in the exhibits to the aforementioned filings. These disclosures were then excerpted and read. 125 of the 152 spun-off firms in our sample have mentioned the adoption of TSAs, and among them 113 firms disclose major parts of their TSAs. Because public companies are mandated to disclose contracts which are material enough to influence investor decisions (Regulation S-K 17 CFR), the absence of a TSA in regulatory filings implies that the TSA was either not used or not material enough to be disclosed.

We matched our sample with CompuStat and CRSP databases to obtain the financial data required for computation of our dependent variables. 128 spun-off firms and 120 parent firms are covered in CompuStat while 138 spun-off firms are covered in CRSP. Due to missing values in individual data items used in computations of different variables, our sample size drops further in various research models as shown in Table 2.

¹ In most cases, these contracts are directly titled "transition service agreement" or "transitional service agreement". Occasionally, they are titled "interim service agreement", "service agreement", or "corporate service agreement". We rely on the description of these contracts in the spun-off firms' filings to conclude if they are transitional services agreements.

Dependent Variables

Time-to-close the deal

We computed the time-to-close the deal as the duration of the period between the announcement date of a spin-off deal and its close date. Both dates were collected from the SDC Platinum database. We trimmed the raw data at the 5th and 95th percentiles to exclude extreme observations (Barber and Lyon 1996). As a result, four extreme observations were excluded in the estimation models, which include spin-off deals taking less than 23 days or longer than 630 days to close.

Market Valuation

We used Tobin's Q to capture the market valuation of the spun-off firm at its first trading date. Tobin's Q is a market-based, forward-looking measure which reflects capital markets' perception of a firm's future growth potential. Because a spun-off firm files its security registration forms and discloses spin-off information to SEC before its stocks are approved to be publicly traded, if transition services provided by the parent firm have any impacts on the spun-off firm, it should be reflected in the spun-off firm's valuation on the first trading date of its stock.

Tobin's Q contrasts market value of a firm with the replacement cost of its assets. This measure has been used in previous studies to detect IT effects on firm performance (e.g., Bharadwaj et al. 1999; Tanriverdi 2006). It is computed based on the following formula (Bharadwaj et al. 1999):

$$Tobin's\ Q = (MV + PS + DEBT) / TA$$

Where MV = [the closing price of the company's stock at its first trading date (CRSP item: PRC)] x [the total number of outstanding shares (CRSP item: SHOUT) at the same day];

PS = [the liquidating value of the firm's outstanding preferred stock (Compustat item: PSTKL)];

DEBT = [Current liability (Compustat item: LCT) – Current assets (Compustat item: ACT) + Book value of inventories (Compustat item: INVT) + Long term debt (Compustat item: DLTT)];

TA = [Book value of total assets (Compustat item: AT)].

Operating Performance

We use the improvement (or deterioration) of a spun-off firm's return on assets (ROA) as a measure of its operating performance. ROA is computed as the operational earning of the company (CompuStat item: EBITDA) divided by its total asset (CompuStat item: AT). ROA improvement is then computed as difference between ROA in two years after the spinoff in comparison with the ROA in the year before the spin-off. This two years window is selected to observe the business restructuring intensity of the spun-off firm after the spin-off. For each spun-off company, its fiscal year end date is compared with the spin-off deal close date to ensure that we select the correct fiscal year before the spin-off for computation. ROA has been widely used as a performance measure in similar research context (e.g., Bergh 1995; Hoskisson et al. 1994).

Independent Variable

Duration of transitional IT Service

In the aforementioned process, we collected spun-off firms' SEC filings about their TSAs with their parent firms. For each spin-off, we examined the existence of the following six types of functional services contracted in a TSA: IT services, financial services, human resource services, legal services, marketing services, and supply chain services. The duration of each type of transitional service was also collected when it exists. We dropped 11 observations for which there is evidence about the existence of TSAs but not enough information about the types of services provided or their durations. The data is measured in months.

Thus, duration of transitional IT service is measured as the length of the period in which the parent firm committed to provide IT services to the spun-off firm and considered zero if IT services are not contracted in a TSA. Our data show that IT services are the most frequently provided transitional services from the parent firm to the spun-off firm.

The average duration of IT services is also the longest. About 65% of our spin-off sample has utilized transitional IT services. The average duration of transitional IT services is 11.69 months (SD=14.15).

Business restructuring intensity

We measured business restructuring intensity as the portion of the spun-off firm's revenue allocated to restructuring activities within two years after the spin-off. Specifically, it is measured as the ratio of restructuring cost (CompuStat item: RCP) to the sales (CompuStat item: SALE) of the spun-off firm within the two years period after the spinoff. As explained by CompuStat manual, the item RCP means "*Restructuring Costs Pretax*" and covers "*closing costs, exit costs, reductions in workforce, rationalizations, realignment, relocation charges, repositioning, early retirement, and Chapter 11 reorganization costs/Chapter 11 expenses.*" This item is widely used in the accounting literature to measure a firm's restructuring costs (e.g., Ashbaugh-Skaife et al. 2007; Doyle et al. 2007; Ogneva et al. 2007).

Control Variables

Duration of non-IT transitional services

In addition to transitional IT services, we controlled for the duration of five other functional services as contracted in TSAs, including financial services (e.g., accounting, tax, auditing, treasury, and corporate finance functions), human resource services, legal services, marketing services, and supply chain services (e.g, procurement, inventory management, distribution, transportation, and other logistics functions). These five variables are also measured in months.

Characteristics of the Transaction

Transaction volume. We controlled for the relative transaction volume because large deals tend to involve longer transition services, spin off more attractive businesses, but also take longer time to close. Transaction volume is measured as the percentage of revenue divested (Hitt et al. 1996), which is computed as the revenue of the spun-off firm divided by the revenue of the parent firm in the most recent fiscal year before the spin-off.

Relatedness. The relatedness between the parent and the spun-off firms' businesses is a widely studied factor that shapes both divestiture processes and outcomes (e.g., Bergh 1995; Desai and Jain 1999; Woo et al. 1992). Following (Krishnaswami and Subramaniam 1999), we measured relatedness as a dummy variable which takes 1 if the primary business of the parent firm and the spun-off firm operating in the same industry based on two digit SIC code.

Reciprocity. Instead of unidirectional transitional services provided by the parent firm to the spun-off firm, the transitional services are reciprocal in 37.2% of our observations, although the services from the spun-off firm to its former parent are usually much less significant in their scale and scope. Providing services back to the parent firm will increase the bargaining power of the spun-off firm, and thus potentially influence our dependent variables. Thus, we controlled for the reciprocity of the transitional services. Reciprocity is measured as a dummy variable which takes 1 if the parent company and the spun-off company provide transitional services to each other.

SOX exposure. The Sarbanes-Oxley Act (SOX) dramatically increased the role of IT controls in regulatory environment of public companies listed in the United States. Divestitures could disrupt the internal IT control environment of the divesting firm and causes its incompliance with SOX (Tanriverdi and Du 2009). With the pressure of SOX compliance, both the parent and the spun-off firms will be more cautious in negotiating transitional IT services. Thus, we controlled for SOX exposure of the spin-off deal. SOX exposure is measured as a dummy variable which takes 1 if the spin-off deal is closed in or after the year 2004, the earliest SOX compliance deadline.

Regulated Industry. Industry-specific regulation plays a major role in determining the structure of a spin-off deal and the time needed to close a deal. We thus controlled whether the spun-off firm is operating in highly regulated industries, measured as a dummy variable which takes 1 if the NAICS sector code of the spun-off company equals 22 (utility), 48 or 49 (transportation), or 52 (finance).

Characteristics of the spun-off firm

Size. The size of the firm before the spin-off may determine its market valuation, its future performance, and the transitional arrangements. So we controlled for the size of the spun-off firm before the spin-off. The size of the spun-off firm is measured as the logarithm of its total assets (CompuStat item: AT) at the end of the most recent fiscal year before the spinoff. Although a spun-off firm starts to be publicly traded only after the spin-off, it is mandated to disclose its historical financial data for the past three years, which is also recorded by CompuStat. So, financial data about spun-off firms before the spin-off are generally available.

Profitability. Similarly, the profitability of the firm before the spin-off may influence its market valuation, its future performance as well as the transitional arrangements. So we controlled for the profitability of the spun-off firm before the spin-off. The profitability of the spun-off firm is measured as its ROA, as previously defined, at the most recent fiscal year before the spin-off.

Characteristics of the parent firm

Size. Large companies tend to have more abundant resources and well established routines to contract and provide transitional services to their spun-off units. Business units spun off from large companies may have more coverage from both public media and equity analysts, which possibly influence their valuation. So we controlled for the size of the parent firm, measured as the logarithm of the total assets of the parent firm (CompuStat item: AT) at the end of the most recent fiscal year before the spin-off.

Economic cycle and industry controls

Economic cycle. Capital markets demonstrate periodic patterns with economic cycles. Since our sample covers a relatively long period from 1999 to 2009, the valuation of the spun-off firm may be influenced by the stock market condition when the spin-off happens. We controlled whether a spin-off happens in a stock market booming year by a dummy variable. This variable takes 1 when the S&P 500 index in the observation year is above the average of the period 1999-2009, and 0 otherwise.

Industry. Capital market valuation varies as a function of industry value. Thus, we controlled for the industrial effect by using the average Tobin's Q of an industry. Industry is defined based on the 2 digit NAICS sector code.

Table 1 presents the descriptive statistics and pair-wise Pearson correlation coefficients among our study variables.

Model Specification

Our dependent variables span different stages during the timeline of a spin-off deal. This implies that the variables in earlier stages of the timeline could become endogenous variables in models examining later stages of the timeline. For example, the time-to-close the deal becomes endogenous to the market valuation model which in turn becomes endogenous to the operating performance model. Therefore, instead of estimating separate regressions for our hypotheses, we estimated simultaneous equation models using three-stage least squares method (3SLS) (Greene 2002). We estimated a system of the following three simultaneous equations by 3SLS:

$$\left\{ \begin{array}{l} \text{Time-to-close the deal} = \beta_0 + \beta_1(\text{Duration of transitional IT service}) + \sum \text{controls} + \varepsilon_1 \\ \text{Tobin's } Q = \gamma_0 + \gamma_1(\text{time-to-close the deal}) + \gamma_2(\text{Duration of transitional IT service}) + \sum \text{controls} + \varepsilon_2 \\ \text{ROA improvement} = \eta_0 + \eta_1(\text{Tobin's } Q) + \eta_2(\text{Duration of transitional IT service}) + \eta_3(\text{Restructuring intensity}) \\ \quad + \eta_4(\text{Duration of transitional IT service}) \times (\text{Restructuring intensity}) + \sum \text{controls} + \varepsilon_3 \end{array} \right.$$

Table 1. Descriptive Statistics and Pairwise Pearson Correlation Coefficients

Variable	1	2	3	4	5	6	7	8	9	10
1. ROA improvement										
2. Time-to-close the deal	-.142									
3. Tobin's Q	.116	-.093								
4. Restructuring intensity	-.098	.094	.149							
5. Duration of transitional IT service	.063	.164 *	-.054	.138						
6. Duration of transitional financial service	-.003	.003	-.153	.132	.518 ***					
7. Duration of transitional HR service	.028	-.021	-.047	-.127	.535 ***	.671 ***				
8. Duration of transitional legal service	-.024	-.067	-.071	-.040	.433 ***	.674 ***	.528 ***			
9. Duration of transitional marketing service	-.044	.187 **	-.011	.015	.465 ***	.287 ***	.334 ***	.270 ***		
10. Duration of transitional supply chain service	-.093	.030	-.123	.009	.212 **	.368 ***	.267 ***	.151 *	.459 ***	
11. ROA of the spun-off firm	-.909 ***	.162 *	-.135	-.174 *	-.039	-.046	.035	.021	.015	.023
12. Size of the spun-off firm	-.250 **	.262 ***	-.420 ***	-.106	.163	-.039	-.009	-.097	-.028	-.030
13. Size of the parent firm	-.189 *	.312 ***	-.333 ***	-.126	.267 ***	.137	.151	.014	.027	.014
14. Transaction volume	-.099	-.155	-.033	-.068	.079	.086	.081	.250 **	-.081	-.098
15. Relatedness (1=related)	-.055	-.027	-.126	.086	.182 **	.078	.089	.120	.133	.109
16. Reciprocity (1=reciprocal)	-.043	.070	-.103	.110	.112	.051	.099	-.123	.098	-.100
17. SOX exposure (1 = exposed)	-.046	.221 ***	-.110	.016	.105	.104	.213 **	.005	-.008	-.007
18. Regulated industry (1 = regulated)	-.029	-.110	-.125	-.079	.033	-.036	.004	-.047	-.070	-.145 *
19. Economic cycle (1 = high)	.067	.096	-.054	-.065	.092	-.003	.072	.020	.066	-.086
20. Industry average Tobin's Q	-.010	-.027	.022	.111	.157	.166 *	.066	.112	.160 *	-.014
N	101	145	125	111	133	136	135	140	141	139
Mean	.006	212.676	1.833	.018	1.692	9.375	9.881	3.986	1.950	2.748
Standard Deviation	.270	113.722	3.180	.070	4.151	10.308	1.275	9.248	6.575	7.127

Variable	11	12	13	14	15	16	17	18	19	20
11. ROA of the spun-off firm										
12. Size of the spun-off firm	.276 ***									
13. Size of the parent firm	.245 **	.830 ***								
14. Transaction volume	.082	.031	-.193 **							
15. Relatedness (1=related)	.031	-.072	-.136	-.008						
16. Reciprocity (1=reciprocal)	.029	.271 ***	.188 **	-.134	.056					
17. SOX exposure (1 = exposed)	-.014	.378 ***	.432 ***	-.120	.006	.260 ***				
18. Regulated industry (1 = regulated)	.023	.336 ***	.268 ***	-.076	-.102	.074	.167 **			
19. Economic cycle (1 = high)	-.064	.182 **	.213 **	-.018	.006	.081	.266 ***	-.016		
20. Industry average Tobin's Q	-.018	-.244 ***	-.179 *	-.070	-.031	-.035	-.144	-.133	-.156 *	
N	118	119	133	107	152	148	152	152	152	127
Mean	.099	2.864	7.855	.537	.414	.372	.441	.118	.632	13.390
Standard Deviation	.337	.825	2.435	1.081	.494	.485	.498	.324	.484	19.567

*: p<0.1; **: p<0.05; ***: p<0.01; Two-tailed t-tests

We controlled for non-IT transitional services in all three equations. We controlled all characteristics of the parent, the spun-off firm, and the deal in the time-to-close the deal equation. For market valuation, we further controlled for industrial effect and economic cycle but not the industrial regulation status. Last, for operating performance we controlled the initial condition of the spun-off firm such as its size and profitability, considering that other pre-spin-off factors had been accounted for by including market valuation in estimating operating performance. The detailed list of control variables for each equation is presented in Table 2.

Results and Discussions

The model estimation results are presented in Table 2. The estimation results of each equation are presented in one column. Brief results are also graphically presented in Figure 2 for interpretation convenience. Some of our control variables have relatively high correlations. Thus, we check variance inflation factors (VIFs) to assess potential presence of multicollinearity. The highest VIF score in our models is 6.31, which is below the suggested threshold of 10. Thus, we do not find evidence of severe multicollinearity problems.

In Table 2, the relationship between the duration of transitional IT services and the time-to-close the deal is significant and positive, indicating that planning to provide longer transitional IT services is associated with longer time between the announcement of the spin-off and its close. Thus, H1 is supported. This finding confirms the anecdotal evidence that IT is often neglected in planning a corporate transaction. Because the provision of transitional IT services will postpone the IT independence of the spun-off firm, if IT independence is a serious concern at the deal planning phase, then the adoption of transitional IT services should shorten the deal close time.

Otherwise the timeline will be mainly driven by deal negotiation and preparation, in which providing transitional IT services complicates the transaction structure and incur more contracting and preparation costs. Both anecdotal evidence and our empirical results support the latter rationale.

The effect of transitional IT service duration on market valuation is negative and significant, which suggests that the reliance on the parent firm for IT services is considered to be a negative signal by capital markets. Thus, H2 is supported.

The results show that longer transitional IT services positively and significantly affect operating performance (H3). Thus, H3 is supported. However, the main effect of business restructuring intensity on operating performance (H4) is negative but not significant, indicating that we do not have statistical evidence in support of H4. The joint performance effect of transitional IT service duration and business restructuring intensity is positive and significant (H5). Thus, the results indicate that longer transitional IT services not only directly improve the spun-off firm's performance, but also mitigate the potential negative impacts of business restructuring activities.

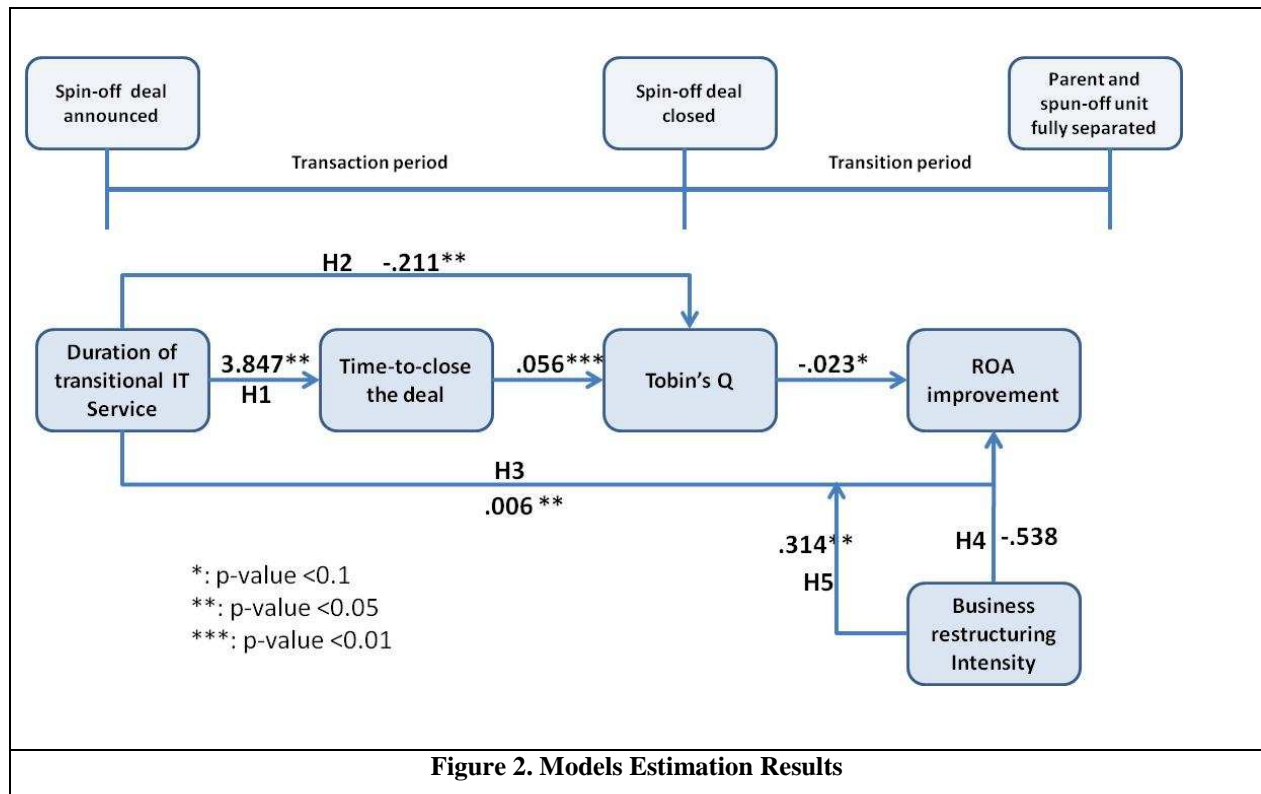


Table 2. 3SLS analysis results on the impacts of transitional IT services

Dependent Variables	Equation 1: time-to-close the deal	Equation 2: market valuation (Tobin's Q)	Equation 3: operating performance (ROA improvement)
Time-to-close the deal		.056 *** (.011)	
Tobin's Q			-.023 * (.013)
Duration of transitional IT service	3.874 ** H1 (1.588)	-.211 ** H2 (.083)	.006 ** H3 (.003)
Restructuring intensity			-.538 H4 (.475)
Duration of transitional IT service X restructuring intensity			.314 ** H5 (.140)
Duration of non-IT services			
Duration of transitional financial service	.452 (2.366)	-.165 * (.099)	-.004 (.003)
Duration of transitional HR service	-2.69 (2.024)	.231 ** (.093)	.002 (.002)
Duration of transitional legal service	.012 (1.91)	.002 (.079)	.002 (.002)
Duration of transitional marketing service	6.875 *** (2.489)	-.432 *** (.130)	.003 (.003)
Duration of transitional supply chain service	-5.404 ** (2.671)	.318 ** (.127)	-.003 (.003)
Characteristics of the spun-off firm			
ROA of the spun-off firm	164.917 ** (65.837)	-3.966 (3.309)	-.280 *** (.105)
Size of the spun-off firm	23.814 (33.463)	-2.876 ** (1.304)	-.020 (.028)
Characteristics of the parent firm			
Size of the parent firm	-3.291 (13.509)	-.031 (.501)	
Characteristics of the transaction			
Transaction volume	-34.807 * (18.977)	2.094 *** (.755)	
Relatedness (1=related)	26.851 (24.848)	-2.762 *** (1.037)	
Reciprocity (1=reciprocal)	-28.793 (29.099)	2.229 ** (1.107)	
SOX exposure (1 = exposed)	11.691 (27.688)	1.368 (1.141)	
Regulated industry (1 = regulated)	.897 (26.7)		
Industrial and periodic effects			
Economic cycle (1 = high)		-1.978 ** (.868)	
Industry average Tobin's Q		-.031 * (.019)	
Constant	173.767 *** (61.809)	-.336 (3.083)	.146 (.107)
Number of observations	64	64	64
χ^2	32.13 ***	47.70 ***	57.60 ***

Notes:

*: p<0.1; **: p<0.05; ***: p<0.01;
Standard errors are in parentheses

Conclusions

Corporate spin-offs provide an interesting context in which researchers can observe how an existing business unit purposefully disposes of its existing IT services and builds brand new IT services as it tries to restructure itself as an independent firm, but at the same time, minimize disruptions to its established business. Receiving transitional IT services from the parent is a key mechanism for balancing these conflicting objectives. Our findings show that transitional IT services are critical for minimizing the negative effects of business restructuring on operational performance, and improving operational performance of the spun-off unit. But we also find that longer transitional IT services increase the time-to-close the spin-off deal and reduce market valuation of the spun-off unit. Thus, as a consulting firm put well, “TSAs should be viewed as ‘necessary evils’ and used for only the most critical activities” (Deloitte 2006).

Our study contributes to IS research by examining business value of transitional IT services in corporate spin-offs. Most business value of IT research has been conducted under the assumption of equilibrium when business operations of firms are assumed to be relatively stable. In corporate spin-offs, this assumption is not valid. The transaction disrupts the status quo for the spun-off unit dramatically. The unit loses its access to IT services of the parent. It has to create new IT services to be able to operate as an independent firm. Transitional IT services is one mechanism to manage through this disequilibrium phase until the spun-off firm builds its new IT platform and a new equilibrium emerges. This study makes a contribution by uncovering business value of transitional IT services in that period.

Our findings also have implications for finance and strategic management literatures on valuation and performance of corporate spin-offs. Although practitioners claim that “operations are the heart of divestiture value” (Kumar and Borgman 2009), finance and strategic management research focus exclusively on macro level determinants of spinoff value and performance. They pay very little attention to the separation process (Brauer 2006). The omission of the transition and separation processes could partially explain why existing findings on valuation and performance of corporate spinoffs are mixed and conflicting (Veld and Veld-Merkoulova 2009). By showing that the length of transitional IT services significantly impacts both the valuation and operating performance of spun-off units, this study shows that there is potential to advance the current states of finance and strategic management literatures on corporate spin-offs by introducing IT constructs into research models.

There are several potential directions to extend our study. First, although both TSAs and outsourcing contracts are service agreements, TSAs have many unique characteristics. Unlike outsourcing relationships, parties of TSAs need to finally cut inter-organizational routines and interfaces rather than build them. In addition, service providers of TSAs have more bargaining power and are less incentivized to provide services, which are both opposite to the situations in an outsourcing context. These differences should have influences on contract design. A study on contracting transitional services may reveal different insights from regular outsourcing contract studies which are prevalent in recent years. Second, the length of transitional services is shown to have both potential drawbacks and benefits in this study. There could be multiple contingencies influencing the tradeoff. Further studies can be positioned to provide decision guidance on selecting optimal service duration. Third, our study is subject to the limitations of archival data. Future studies using either qualitative or survey research methods may reveal further insights about IT transition processes.

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