



ORGANIZATIONAL PERSPECTIVE

The role of information technology systems in the performance of mergers and acquisitions

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Abstract Mergers and acquisitions (M&As) are an important tool for improving a firm's competitive positioning and performance. Despite M&As' promise, however, they often fail to meet performance goals. Challenges often arise when managers try to integrate two companies' information technology (IT) systems, and the difficulties encountered often create both short- and long-term performance problems for companies. To help address these challenges, we highlight important issues that managers involved in M&As must consider. We also present some best practices that managers should follow to improve the odds of successful IT integration.

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Many mergers don't live up to expectations because they stumble on the integration of technology and operations. But a well-planned strategy for information technology integration can help mergers succeed.

(Sarrazin & West, 2011)

1. The urge to merge

Mergers and acquisitions (M&As) are an important tool for improving competitive positioning and organizational performance. M&As offer managers a way to build, strengthen, or renew competitive advantage by combining the strengths of two companies. More specifically, they can help a firm expand

geographically, add new product lines, reduce competition, achieve economies of scale, enhance research and development, and obtain other strategic benefits. In an effort to capture these potential benefits, companies worldwide conducted M&A transactions in 2014 totaling approximately \$3.4 trillion (Raice, 2015). If M&As were a national economy in 2014, they would have been the fifth largest in the world, trailing only the United States, China, Japan, and Germany.

Despite their promise, however, M&As often fail to improve company performance. For example, Mattel purchased The Learning Company in 1999 for \$3.6 billion and sold it just a year later for \$430 million—12% of what it paid. Similarly, Daimler-Benz purchased Chrysler in 1998 for \$37 billion. When the acquisition was undone in 2007, Daimler recouped only \$1.5 billion worth of value—4% of what it paid. More generally, research has found that M&A success rates may be as low as 10%–30%, with the remainder

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creating no appreciable improvement and, in some cases, even reducing a combined firm's long-run performance (KPMG, 2009).

M&As are challenging, in part, because they require managers to integrate two companies' personnel, cultures, infrastructures, and business strategies. Often unforeseen problems arise that reduce anticipated benefits from or increase projected costs of a merger (Haspeslagh & Jemison, 1991). Although experts often attribute successes or difficulties to managing 'soft' strategic issues like integrating different company cultures, merging 'hard' assets like information technology (IT) systems also present daunting challenges. For example, the Delta-Northwest Airline merger in 2008, which has been widely viewed as successful (Schnurman, 2013), required consolidating about 1,200 computer systems to about 600, including integrating a reservation system originally installed in 1966 (Mouawad, 2011).

Often the difficulties encountered when merging IT systems create both short- and long-term performance problems. When Bank One merged with First Chicago NFD in 2000, top management failed to integrate IT systems for over 2 years, resulting in customer satisfaction scores declining 6% and a net loss of 200,000 customers in 2001. New Comcast billing systems installed following its acquisitions of other companies have resulted in customers not receiving credit for paying cable bills, consequently hurting the company's customer satisfaction scores (Thornton, Arndt, & Weber, 2004). In 2012, 2 years after United joined with Continental Airlines to create the world's largest airline, the merged company's reservation system failed twice, shutting down its website, disabling airport kiosks, and delaying or canceling flights (Mouawad, 2012).

These cases illustrate that IT integration issues remain one of the top difficulties when merging companies. In fact, one study found that only 30% of managers involved in mergers believed that the combined companies had successfully integrated their IT systems (Accenture, 2006). These results are discouraging because up to half of the benefits from a merger may be IT related (Sarrazin & West, 2011). To help address these challenges, we next highlight important issues that managers involved in M&As must consider. These issues are accompanied by best practices that can help managers improve the odds of successful IT integration.

2. Critical IT integration issues within mergers and acquisitions

IT's important role in companies' overall competitiveness translates into a corresponding need to

successfully integrate these systems as part of the M&A process. Given this importance, how can managers successfully integrate IT systems, which often serve as a stumbling block in many mergers? Recent research can provide some answers to this question, and in the following sections, we discuss four of the most critical issues, which we summarize in Table 1.

2.1. Before the merger: Involve the CIOs

When top managers consider M&As, they often first focus on financial, legal, and product line issues. As a result, they may only consider IT integration issues once the merger is underway. Research has shown, however, that when considering a merger, managers must first consider IT's importance to a firm's competitive advantage and then involve people knowledgeable about these systems early in the process to increase chances of success (Stylianou, Jeffries, & Robbins, 1996).

Evidence suggests that managers should consider IT issues as part of the initial motivation for an M&A (Buck-Lew, Wardle, & Pliskin, 1992). Just as managers evaluate potential partners based on whether merging could cut costs or enhance marketing, research, or international capabilities, they also need to consider whether a union could leverage IT systems to enhance the combined company's competitive advantage. Failing to assess a potential partner's IT systems could result in missed opportunities to exploit potential advantages. It could also increase difficulties in integrating the systems if, for example, one company has outdated computer hardware or customized software that is difficult to combine with another IT system. More generally, much of the financial and operational information used when deciding whether or not to merge with another company is supplied by each company's IT system, so managers need to evaluate the quality of these systems to assess the quality of the resulting information (Shaffer & Schrock, 2012). Research has shown that top management commitment to IT integration during a merger can improve subsequent reliability of these systems and, in turn, enhance company post-merger performance (Robbins & Stylianou, 1999).

People knowledgeable about IT, such as each firm's chief information officer (CIO), should be included as part of the M&A process from the beginning. Giving these experts a seat at the table, beginning with the search for potential merger partners and continuing through the M&A process, can help managers pick better merger candidates. Having these experts on board also allows managers to conduct in-depth IT audits, which can help avoid unexpected M&A costs that arise from trying to integrate with partners

Table 1. Key information technology issues within mergers and acquisitions (M&As)

Challenge	Solution	Illustrative Example
Viewing IT as a key M&A consideration from the start	Involve the two firms' Chief Information Officers very early in the M&A process	When Land O' Lakes considered acquiring GeoSys, a French company that used satellite data to inform farmers about crop health, its CIO assessed the age, scalability, and average downtime of GeoSys' IT systems to look for potential risks.
Integrating disparate IT systems following the merger	Carefully match one of three options—complete integration, partial integration, and coexistence—to the firm's internal capabilities	Oracle's consolidation of 70 internal IT systems into a single enterprise-resource-planning system helped it make more than 50 acquisitions from 2005 to 2009 and to integrate most of them within 6 months.
Reducing IT security vulnerabilities during and after M&As	Quickly align disparate IT security policies across the merged firm	20% of 761 major IT breaches in 2011 involved merging firms. Combining different IT systems often creates increased cybersecurity vulnerabilities in a newly merged firm.
Using IT to enhance a merged firm's sustainable competitive advantage	Place emphasis on building proprietary systems for data analytics that rivals will struggle to copy	United Healthcare acquisition of Humedica provided it access to electronic health records data to complement its hospitalization information, which, in turn, allowed it to develop new services for its client hospitals.

having incompatible systems (Shaffer & Schrock, 2012).

For example, when U.S. agricultural firm Land O' Lakes considered acquiring GeoSys, a French company that used satellite data to inform farmers about crop health, its CIO performed some of the critical due diligence looking for possible risks. This acquisition potentially offered Land O' Lakes an important new strategic capability in the analytics-based 'precision agriculture' market, so it was critical for its CIO to assess the age, scalability, and average downtime of GeoSys' IT systems (Nash, 2014).

2.2. Before the merger: Develop IT integration goals and assess system characteristics

Research on M&As, in general, and IT integration, in particular, has noted that managers must decide early on how integrated a merged company's operations will be. In terms of the latter, they can choose one of the following options (Wijnhoven, Spil, Stegwee, & Fa, 2006):

- *Complete*—The merged company combines all IT systems.

- *Partial*—The merged company combines the IT systems where potential synergies may occur via cost savings or improved information quality.

- *Coexistence*—The merged company runs the IT systems separately, only combining data when absolutely necessary.

Complete integration offers the highest potential merger benefits, but also represents the most challenging option, particularly in large firms with complex IT systems. In contrast, coexistence removes the need to consider most IT integration issues, but it also greatly reduces the potential benefits gained from an M&A that arise from combining IT.

The option managers choose may depend on critical IT characteristics, including processing capability centralization and software standardization within each company. When processing capabilities are geographically centralized and software is standardized, integrating IT systems completely and quickly is more probable. As processing capabilities become more geographically distributed and software more customized, however, post-merger integration becomes increasingly difficult (Giacomazzi, Panella, Pernici, & Sansoni, 1997).

Trying to merge IT systems can be complicated by the fact that each merging firm may not even have standardized IT within its own walls. Thus, firms may need to 'put their own IT house in order' prior to seeking merger partners. For example, Oracle consolidated 70 internal IT systems into a single enterprise-resource-planning system for all business functions between 1999 and 2004, saving the company \$1 billion annually. This consolidation created a platform that supported the company's ability to execute more than 50 M&As from 2005 to 2009 and integrate most of them within 6 months (Sarrazin & West, 2011).

Recent IT trends, such as the rise of cloud computing, where firms access software from external vendors rather than purchasing and hosting the software in-house, may also affect the costs and benefits of post-merger IT integration. On the one hand, it may simplify future post-merger integration and reduce M&A costs as firms increasingly employ standardized software packages. On the other hand, having standardized software means that companies may lack a 'secret sauce' in IT, which could reduce the strategic benefits gained from an M&A.

2.3. During and after the merger: Maintain IT security

One critical threat companies face during and after a merger is the increased possibility of a computer security breach. Verizon's 2011 *Business Breach Research Report*, for example, documented 761 major IT breaches, about 20% of which involved companies going through a merger or an acquisition (Noto, 2011).

Research on data breaches during and after mergers is limited, but evidence suggests that hackers have realized that merging increases firms' vulnerability. Hackers may initially attempt to steal passwords of employees involved in merger talks via methods like e-mail phishing attacks to gain insider information that could be used to trade stocks impacted by the M&A (Yadron, 2014). Security weaknesses can also emerge as more people gain access to firms' IT systems during the due diligence process, and risks can escalate as firms lower system firewalls when integrating systems. In addition, laying off redundant IT and other staff may also increase breach risks as these potentially disgruntled employees exit the firm.

To mitigate these issues, top managers need to quickly align disparate IT security policies within the newly merged firm and assign IT personnel to monitor systems for potential vulnerabilities created by merging different systems. In addition, policies related to company Wi-Fi and USB drive usage may

need to be reexamined to reduce internal threats. Perhaps most importantly, top management needs to educate employees and themselves about heightened security threats during and after the merger (Skoudis, 2007).

This need for top management education is highlighted by recent survey results showing that even though top managers often recognize potential threats from security breaches, they often do not implement actions consistent with these threats. One survey found that 83% of respondents believed an M&A could be abandoned if prior security breaches were found during due diligence, but only 39% said they addressed critical cybersecurity issues prior to completing mergers.

Such inaction can be costly, though, because as one expert noted: "When you buy a company, you're buying its data—and you could be buying its data security problems" ("*Cybersecurity in M&As*," 2014, p. 7). For example, an August 2014 data security breach at JP Morgan has been attributed to a neglected computer server in the bank's vast computer network assembled via M&As (Goldstein, Perloth, & Corkery, 2014). Hackers were stopped before they could access customer bank accounts. Even so, they managed to steal customer names and e-mail addresses, which could be used in phishing attacks by sending e-mails that look like they came from the company. A breach at U.S. hospital firm Community Health Systems has been attributed to vulnerabilities created by using disparate IT systems from recent mergers (Crossman, 2014). In this case, hackers obtained health records with patient Social Security numbers and birthdates, which could be used to create fake credit card accounts and steal identities. Both examples illustrate the difficulties that companies face in defending against cyberattacks during and following M&A integration.

2.4. After the merger: Enhance competitive advantage

The overriding goal of an M&A is to enhance the newly merged firm's competitive advantage and, in turn, increase long-term performance. As noted throughout our discussion, IT, like other important functions, should provide the opportunity to build this advantage. However, debate has raged for some time about whether IT can actually provide a firm with a sustainable competitive advantage.

On one hand, if companies buy hardware or software from the same vendors and recruit IT personnel from the same sources as their competitors, then it is difficult for one to gain a sustainable advantage over another. In addition, although IT systems may allow firms to lock in customers by

raising switching costs (Clemons, 1986), proprietary systems can also isolate a firm from potential customers who may prefer using systems that are ‘platform agnostic.’ As a result, firms using proprietary systems may reduce the advantages they can gain from network effects available from using standardized IT (Carr, 2003). On the other hand, evidence suggests that firms can develop IT-based competitive advantages. For example, McAfee and Brynjolfsson (2008) found that increasing IT investment since the 1990s has sharpened rather than reduced profitability differences among companies. In general, for IT to confer advantages, either IT systems or the ability to use them must be valuable to and imperfectly mobile across firms (Mata, Fuerst, & Barney, 1995).

Research has found that within the context of M&As, potential advantages can arise from two other sources. First, just as managers can learn to better navigate the M&A process—in general, through increasing merger experience (Haleblian & Finkelstein, 1999)—they can also enhance their ability to integrate IT systems the more times they pursue M&As (Tanriverdi & Uysal, 2011). Second, when working with IT, managers often focus on the ‘T’ (technology) and neglect to consider the value of the ‘I’ (information; Fox, 2012). Meanwhile, the rise in data analytics can help managers find nonobvious relationships in mountains of company and customer data that can produce valuable and unique insights. Thus, if data from both companies can be combined, the newly merged company could make more informed strategic decisions and better serve customers, thereby enhancing its overall competitiveness.

For example, when U.S. insurance provider UnitedHealth Group acquired clinical data analytics firm Humedica in 2013, it gained access to electronic medical record data that complemented its existing health insurance information on hospitalizations. Combining these two datasets has helped the company to develop predictive analytic tools that help hospitals reduce readmissions of patients, something they must do to avoid Medicare penalties under the Patient Protection and Affordable Care Act (Conn, 2014).

Although IT can potentially provide a competitive advantage, managers also need to grapple with the double-edged sword of merging proprietary IT systems. Specifically, they must balance the fact that merging two proprietary systems has the potential to produce stronger competitive advantages than combining standardized systems. At the same time, as previously noted, combining proprietary systems also increases integration difficulties in the newly merged firm (Wijnhoven et al., 2006). Thus, as with many M&A issues, managers need to evaluate both

the benefits and costs of different IT integration alternatives.

3. Final thoughts

M&As are complex, and many factors, both controllable and uncontrollable, can impact their fate. Often overlooked among the questions of “How much a company will pay for a merger?” and “Who will be in charge of what in the post-merger company?” is the issue of how managers will integrate IT systems in the newly merged company. Enhanced IT capabilities, however, represent one of the most important advantages that a firm can gain through an M&A. Thus, it is reasonable to expect that the ability to integrate these systems across merger partners will become an increasingly important driver of whether M&As succeed or fail.

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