# High-Tech M&As: Accentuated challenges of IT & Operations-based value creation

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***Abstract:*** *Technology driven industries have seen fast moving technology changes, higher complexity and reduced product life cycles. These emerging trends present challenges for companies in industries where technology is at the forefront. The extant research deals with 'low-tech' industries and majority of findings are not applicable to the high-tech industry; in fact this industry has many additional challenges. In this study, we aim to explore the process of M&A in the high-tech industry by drawing on extant literature and empirical field work. The paper outlines a research project in progress which intends to provide theoretical, empirical and practical contributions in answering the research question: what role does Operations and IT play in creating value in high-tech M&As? The research adds a needed perspective on M&A literature by unveiling unique challenges and opportunities faced by the M&A teams in this sector. The phenomenon is studied from multiple perspectives: integration team, acquiring group and the company being acquired.*

## Introduction

Over the past decade, technology-driven industries have seen fast moving technology changes bundled with higher complexity and drastically reduced product life cycles in both the consumer and enterprise sides of the market. These emerging trends present challenges for companies in industries where technology is at the forefront. They continuously need to build their core competitive advantages and competencies, while simultaneously counting on the management teams to utilize and modify, creating value while acclimatizing to the changing milieu around them (Teece et al., 1997; Prahalad and Hamel, 1990).

## Literature Review

A trend has emerged in recent decades in technology-driven industries: established, dominant technology firms such as Cisco, Microsoft, IBM, and Oracle have increasingly employed acquisition strategies to extend their enterprises with external technologies and operational capabilities (Vanhaverbeke, et al.2002; Kale and Phanish 2004; Desyllas and Hughes 2008). The computer hardware and software industries, along with the networking and electronics industries have most actively utilized M&A. According to Cloodt (2005), companies source externally to obtain value-creating advantages from this technological complexity. However, the activity of sourcing and then absorbing technology innovation from outside is a highly complex process, and acquiring firms vary greatly in their ability to conduct such activities as serial or single acquisition companies (Puranam and Srikanth 2007; Zollo and Singh 2004). According to Price Waterhouse Coopers (2013), non-technology businesses are increasingly disrupted by new technology-based delivery models, or they are finding better ways to leverage technology to engage customers. Historically, M&A activity in the high-tech industry has been soaring, but uncertainty has recently muted growth of new deals. Acquiring companies that possess a complimentary set of business models or operational capabilities can likely result in great benefits for the acquiring company. Acquiring new business models and operational capabilities from a target organization can be very valuable, especially if the organizations can establish a synergistic learning process between both organizations (Hitt et al. 2009). Hitt, et al (2009) also cite Cisco Systems and GE as having "had significant success in making acquisitions, and this success can be at least partially attributed to

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their ability to learn from the acquired firms and to absorb and integrate the new knowledge in order to build new capabilities," suggesting that there is specific value in terms of synergy creation between the acquiring and target company. However, entrepreneurial companies such as Cisco, Microsoft, IBM, and Oracle were once run as nimble organizations in their formative years. During this formative stage, these companies introduced revolutionary technologies and innovations to their customers. Now, they grapple with the growing pains of maturing large enterprises. Each of these high-tech organizations is looked upon as bellwethers in the high-tech industry and in the broader financial market in general. In the technology industry, established firms risk technological obsolescence and replacement by disrupting technologies, unless they are able to identify and partner with new innovative companies that are capable of providing an ongoing stream of innovations and attracting appropriate talent and leadership (Teece 1986, 1992.) The idea is substantiated by the upswing in the number of high-tech acquisitions in recent years (Sikora, 2000) and the growing importance of technology- or innovation-motivated acquisitions (Granstrand et al., 1992; Goodman and Lawless, 1994**;** Link, 1988). The extant literature on acquisition integration deals the process at a theoretical level while research at with an industry context is focused on non-technology industries, and the majority of findings in this research are not applicable to the high-tech industries; in fact, high-tech industries have many additional challenges (Lee et al., 2010).

Additionally, these once-nimble organizations could easily integrate acquisitions, they then faced the problem of vastly complex business and operating models. They now have to learn how to master much more complicated and multi-dimensional acquisitions. M&As are among the biggest challenges for enterprises and specifically their Operations & IT departments to navigate and operationalize. According to Sarrazin and West (2011), many mergers do not live up to their expectations because they stumble on IS & Operations integration. Additionally, according to Henningson (2011), "more than half the synergies available in a merger are strongly related to IS; for example, in the financial services industry approximately 60% of potential synergies are related to IS" Reaping the benefits of a merger or acquisition is a notoriously tricky business. Limited research has focused on the high-tech industry, and given its unique challenges as a sector deeply affected by hyper-competition (Lee et al., 2010), it is an area that needs further investigation. Given the importance of the Operational & IT efforts and success to overall integration success, the research project will start with a focus on this area. This paper aims to provide theoretical, empirical, and practical contributions to the field of research, and the on-going academic conversation, in an attempt to answer the central research question:

***RQ1:*** *What role does Operations and IT play in creating value in high-tech M&As?*

In response to these conditions, companies have started to leverage their acquisition strategy to gain market share and stay competitive. They have developed a strategic ability to source and apply innovation generated externally, as evidenced in companies such as IBM and Cisco. This is, however, a high risk-reward game, as most acquisitions are priced far above the run-rate price of most companies. In spite of the popularity of high-tech M&A and the focus on developing these capabilities, the research suggests that their effects on post-deal outcomes can result in weak or even negative effects (Ernst and Vitt 2000; De Man and Duysters 2005; Kapoor and Lim 2007). Management scholars have extensively explored factors of acquisition results and have found that the success rate depends largely on what is referred to as 'synergy-realization' (Haspeslagh & Jemison, 1991; Hitt, Harrison, & Ireland, 2001**;** Larsson & Finkelstein, 1999), which depends largely on the ability of the acquirer to choose strategically fitting targets (Barney, 1988; Harrison, Hitt, Hoskisson, & Ireland, 1991; Singh & Montgomery, 1987) and increasingly on optimized acquisition integration processes (Datta, 1991; Haspeslagh & Jemison; 1991, Chatterjee, Lubatkin, Schweiger, & Weber, 1992; Larsson & Finkelstein, 1999). As these companies mature and scale their back-office, operations and IT their mindset must also change regarding what a sustainable organization looks like and how it behaves.

Therefore, this study aims to explore the process of M&As in the high-tech industry by drawing on extant literature that focuses on the theme broadly, expert interviews, focus groups and then

narrowing in on specific cases from a relevant technology company. Specifically, we are interested in exploring the interplay between two specific layers of the technology organization: the operations and information technology layers. This research intends to add a much needed perspective on M&A literature by unveiling unique challenges and opportunities faced by the M&A teams in this sector. Toward this end, M&A teams in technology companies can mindfully design and deploy acquisition integration strategies. Additionally, the study also aims to investigate this phenomenon from the perspective of the acquisition integration team, the acquiring group within the organization, and the managers and employees of the company being acquired. The research will be limited to large multi-national companies who acquire in a serial fashion, acquiring multiple companies in a fiscal year, as well as those who acquire small and mid-size organizations. It will not focus on the more complex 'multi-business' mergers. This paper aims to provide a brief review of extant literature in the M&A area, and it outlines a suggested research process using a multi-case study analysis approach. The paper also provides a set of future research findings and best practices and potential pitfalls for managers.

## Initial Theoretical Framing

To this point, modern acquisition integration research is influenced by the work of Jemison and Sitkin (1986) and Haspeslagh and Jemison (1991); since these two publications, scholars have highlighted the significance of planning and implementation in acquisition integration affecting value capture and gains from M&A activity. Specifically, the research on acquisition planning and implementation has focused on the challenge of balancing structural integration and organizational autonomy. Further, research has also focused on the antecedents and consequences of the decision to integrate the target within the organization of the acquirer or to keep it as a standalone (Paruchuri, Hambrick and Nerkar 2006; Puranam, Singh and Zollo 2006; Puranam and Srikanth 2007; Kapor and Lim 2007; Puranam, Singh and Chaudhuri 2009). The majority of the research, starting in 1967 has outlined the concept of "level of integration," or the level to which the acquirer and the target are linked and can be leveraged for competitive advantage.

### *Seen through the CIO's & COO's Lens*

M&As are a major challenge for CIOs and COOs. With M&As on the rise, and with the role of IT integration becoming more critical than ever, it pays for CIOs to build their M&A integration capabilities using proven techniques (Aron, Mesaglio and Albornoz-Allsop, 2010). A 2006 Accenture survey showed that 40% of enterprises reported that their M&A related IT integration had been successful. According to Aron, et al. (2010), outcomes are uncertain, previously unknown, or unimportant facts that suddenly emerge as critical, and there are many moving parts to control. On top of all this, the business must continue to serve clients, run operations, and execute in the face of major, and often disruptive, integration activity.

The role of the CIO and COO in M&As is critical, but successful integration does not rely exclusively on the CIO and COO; they bear a large part of the burden, since integrating people, operations, information, and processes requires significant technology investments (Aron, Mesaglio, and Albornoz-Allsop, 2010). Establishing an end-state or target-architecture for the integration is very important to ensure success. A company can take several different approaches to the integration process. The extent of integration is also determined by how similar the processes and applications are among the merging entities. The end-state of post-merger integration of IT systems, applications, and business processes are driven by a number of factors, including the M&A objectives, the timeframe within which the enterprise needs to achieve the integration, and the cost of the integration that the enterprise can bear within the time horizon of an acquisition. If the objectives of the enterprise in M&A is to benefit purely from the wider portfolio of products or services without operational efficiencies, the company will go with little consolidation and minor reporting systems development. However, if the objective is to benefit by leveraging operational synergies and eliminating redundancies, the enterprise will chose a consolidation of processes and

systems as its end-state. And finally, if the objective is to merge the two entities completely, the choice is clearly to include all functions, processes, and systems and rationalize completely (Jaligama & Goyal, 2011). Despite the popularity of acquiring companies in the high-tech industry, 60–80% of all acquisitions fail to create value (Swaminathan, Feisal, & Hulland, 2008) and are deemed unsuccessful. A majority of enterprises are decidedly dependent on IT & Operations when executing on their business activities; these enterprises depend on the integration of the IT & Operations functions to be successful (McKiernan & Merali, 1995; Giacomazzi et al., 1997; Robbins & Stylianou, 1999; Evgeniou, 2002; Wijnhoven et al., 2006; Mehta & Hirschheim, 2007). Despite the documented importance and relevance, IT integration in M&A is still sparsely addressed in the existing literature (Wijnhoven et al., 2006). IT integration is cited as one of the top five reasons for M&A failure, and more than 45% of the expected benefits from M&As are directly dependent on the systems and technologies being integrated between the target and the acquirer (Rodgers, 2005). One reason is that executives from IT & Operations often aren't included in the due-diligence process, preventing them from offering valuable input on the costs and practical realities of integration (Sarrazin & West, 2011).

## Research Design Rationale & Frameworks

Research specifically on acquisitions conducted within the technology industry is relatively sparse. Companies in this industry, as identified previously, face a series of industry-specific challenges and critical issues. Within the technology industry it is clear that the life-cycle of a post-merger integration is a challenging and important aspect of the process (Kitching, 1967; Haspeslagh and Jemison, 1991), some with specific focus on technology focused acquisitions (Gerpott, 1995). Several other researchers have focused on the impact the integration process has (Finkelstein, 1986; Jemison and Sitkin, 1986). The strategic intent has also been a focus of several researchers, with the focus on the type of integration (Haspeslagh and Jemison, 1991; Pablo, 1994; Kaplan, 2001). However, the majority of scholars define the significance of the acquisitions' purposes in determining the strategy for the integration and the value it creates; remarkably few have chosen to focus on the integration aspects of a specific type of acquirer (one-off or serial), a particular acquisition motivation, or a singular industry (Ranft and Lord 2002).

### *Conceptual Framework*

Given the challenges identified in previous literature that covers the acquisition integration process and the opportunity to study the phenomenon at a close distance, we chose to focus the aperture of the initial research on the role of the Operations & Information Systems interactions in the process initially. Multiple vantage points exist when studying the acquisition integration process, and given the researchers' pre-existing knowledge, it was logical to start the inductive and abductive research process rooted in this perspective. The framework was created using information collected during previous research activities as well as from expert interviews conducted during the feasibility phase of this study. The planned utilization of this framework to guide the research is described in the following section. The central thesis is that the CIO (IT/IS) and the COO (Operations) play a key role in enabling a successful acquisition integration process and their collective impact on the 'time to value' metric.

### *Methodology and Operationalization*

This study uses an inductive and abductive epistemological approach within a post-positivist perspective in the development of theory. A pre-established theory-based conceptual framework will be used as tentative prior constructs (Eisenhardt, 1989) or seed categories (Miles and Huberman, 1994). Because the research question focuses on a new understanding of the 'why', 'what' and 'how' M&A is operationalized in the high-tech industry, the research method selected for this research can be described as interpretive qualitative case studies using grounded theory techniques. The reality of general acquisition integration practices is well known; however, very

little literature exists specifically about the high-tech industry. The goal is not to test hypotheses and establish universal laws of cause and effect; rather, the goal is to produce small, but rich descriptions from a particular context and setting. The goal of the research is best reached using a qualitative approach such as case studies (Eisenhart & Graebner, 2007). Since the case study research method is the most common qualitative method used in information systems (Orlikowski and Baroudi, 1991; Alavi and Carlson, 1992), it is chosen for this application as well. Specifically, we adopted the multiple-case design, which implies replication logic (Yin, 2009), within which a case is treated as an idiosyncratic expression of the phenomenon under study. Yin's (1994) definition of a case study is as follows: "An empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident," and this suggests that the application in this research is particularly suitable. An additional argument for using the interpretive case study research method for this research is that the process of operationalizing acquisition integration in technology companies is a complex process marked by no formal theory of model prediction connections between the variables.

***Proposed Data Collection and Analysis***

Complementing the selected multi-case study research method, the collection of data for the four case studies will be conducted inductively through a semi-structured interview process. This will be supported by additional information from internal reports, presentations, and other documents, along with public information on the company website. All primary data will be collected using Grounded Theory Method (GTM) techniques (Strauss and Corbin, 1998; Dyer and Wilkins, 1991), which promotes inductive theory creation from different types of data. The intent of the analysis is to be rooted in the empirical case material (inductively) and not from pre-defined hypotheses (deductively) to generate the theory. The intent is for the tentative prior constructs from theory to be used only to help initially shape the design of the data collection and analysis in the individual case studies and to ensure that the theoretical understanding will be developed and used in a hermeneutic process across and beyond the case studies. The researcher will conduct an analysis after each interview and use a continuous comparison approach to identify commonalities and to rule out any one-time events, thus ensuring a robust theory.

Using GTM techniques, the analysis will be conducted using three different coding procedures: open coding, axial coding, and selective coding (Strauss and Corbin 1990). Open coding involves "breaking down, examining, comparing, conceptualizing, and categorizing data" (Strauss and Corbin 1990). The initial output of GTM is open codes, which is then aggregated into higher-order concepts called categories and their attributes (properties). Axial coding then formalizes a set of procedures that allow for the reformulation of the data obtained from open coding by developing explicit hierarchical relationships between categories and subcategories. Axial coding is performed until all categories identified during open coding have been included in some category-sub-category relationship. Selective coding constructs relationships among the higher order categories that were identified during the axial coding phase. This coding procedure selects the core categories and systematically relates them to other categories. Correspondingly, our first design requirement is to follow the steps of GTM to derive NFRs from qualitative text data (e.g., interviews with stakeholders). Following this approach, the researcher plans to conduct 52 interviews across multiple instances of acquisitions, using a semi-structured interview guide (Kvale, 1996). Semi-structure interviews allow the subjects of the interviews to explain the M&A process in very rich detail, preserving chronological flows and fruitful explanations in their own words while still keeping some structure. The researcher will ask the questions in an open manner in order to encourage the subjects to bring up issues that are important to them.

## Initial Findings & Expected Contributions

The feasibility phase of this research has been based on leveraging findings from our previous related research. This research is focused on the findings from our literature analysis and the need to focus additional attention on the high-tech industry.

In addition, using the conceptual framework, the researcher initially conducted several expert interviews, attempting to substantiate the connections identified in the framework while also looking for attributes that characterize the uniqueness of M&A in the sector have contributed to the questions included in the semi-structured interview guide, the sequence of the cases and the types of individuals the research will focus on. Specifically, the interviews revealed that it was important to focus not only on the acquisition integration team and the acquiring business units leadership team, but also on the point of view (POV) of the acquirees, or those being integrated into the company. To further support the case study interviews, the researcher conducted a focus group to provide emerging themes or 'affinities as described by Interactive Qualitative Analysis (Northcutt & McCoy, 2004) with the heads of acquisition integration in high-tech companies who are considered serial-acquirers as participants. The method to analyze the data, Interactive Qualitative Analysis, was developed by Northcutt, Miles, et al (1998) at the University of Texas at Austin and uses a systems approach to qualitative research. The class members are consistent with Interactive Qualitative Analysis (IQA) intensity sampling. The participants have the ability to reflect and are willing to participate as experiential experts with the issue. IQA combines the tradition of phenomenology, which asks what is the structure and essence of the experience of the phenomenon for the people in the study, and systems theory whose central question is: how and why does this system function as a whole (Patton 1990). The systems perspective is gestalt in origin, which views relationships as interconnected parts with the whole being greater than the individual parts. Change in one-part leads to changes among all parts and the system itself. A focus group was conducted with nine heads of acquisition integration. The focus group resulted in the discovery of 12 emerging themes & challenges, which will be used the direct the interviews and uncover how each case overcame or faced these challenges.

This paper outlines the initial feasibility of research that supports an empirical study of the acquisition integration process in the high-tech industry. There is a need for a new perspective on how the process is adopted in the high-tech industry, its unique challenges, its inhibitors and enablers to success. The paper offers a grounded theory model research model that melds research from the information systems field with the operations field. The ongoing study is expected to provide several theoretical implications in the areas of Information Systems/Technology, Operations & Strategic Management. First, although current research provides a good representation of general M&A processes, there is a need to specifically focus on the phenomenon in the high-tech industry, given its unique characteristics. This study will fill this gap by exploring the phenomenon at a close distance across four representative case studies in the high-tech industry. It will ground the findings in empirically based findings. Second, the research also aims to represent a previously ignored participant in the process, namely the acquiree, or target of the acquisition. Through the initial research phase, the researcher has identified this group as a key contributor to the complete picture of M&A in the high-tech industry. This study also intends to offer important practical implications for managers in the high-tech industry, particularly for those involved in the planning, coordination, and execution of the integration process, but also for those who are part of the target organization or the acquiring business unit. Because of its foundations in the current literature and in general M&A theory, we are confident that the resulting research findings, resulting model, and future research opportunities will be useful in the development of theory in this emerging part (high-tech context based research) of an established research area of M&A.

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