



Editorial

Strategic IT alignment: twenty-five years on

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The 'jewel in the crown' from the MIT90s [Management in the 90s] program is undoubtedly the Strategic Alignment Model (SAM) of Henderson and Venkatraman.

(MacDonald and Yapp, 1992: 256)

Introduction

All research streams can trace their lineage to an initial paper or series of papers. The information systems (IS) field – despite its relative youthfulness – can point to examples of seminal research by Davis (1989) on technology acceptance or Brynjolfsson and Hitt (1996) on information technology (IT) payoffs as the foundation of whole new areas of research. After almost a quarter century and 3200 citations (as of October 2014), many researchers would also include work by Henderson and Venkatraman (1993) – first published in the *IBM Systems Journal* under the heading, 'Strategic Alignment: Leveraging Information Technology for Transforming Organizations' – on the list of seminal and transformative IS publications.

Interest in understanding the antecedents and consequences of alignment between business and IT is now an established theme in IS research. Recent research continues to build on empirical evidence that reveals positive effects of alignment on business performance (Sabherwal and Chan, 2001; Oh and Pinsonneault, 2007; Yayla and Hu, 2012; Gerow *et al.*, 2014). The central argument underlying these studies is that organizations will perform well when key IT resources – physical IT infrastructure components, technical and managerial IT skills, and knowledge assets – are aligned with business strategy and when appropriate structures are used to supervise the deployment and effective management of these resources. Over time, research has identified several antecedents that influence strategic alignment such as shared understanding between business and IT as to the strategic nature of IT (Preston and Karahanna, 2009), governance mechanisms for IT (Wu *et al.*, forthcoming), enterprise architecture maturity (Bradley *et al.*, 2012), and strategic direction (Sabherwal and Chan, 2001).

Models of strategic alignment and its components have been proposed and extended over time as a way to provide managers with more practical ways to achieve alignment (Sabherwal *et al.*, 2001; Avison *et al.*, 2004). However, research also indicates that organizations can fall into a *rigidity trap* where tight or inflexible links between business and IT can delay or impede an organization's ability to respond quickly to environmental change (Benbya and McKelvey, 2006; Tallon and Pinsonneault, 2011). Getting the right level and type of alignment is important, therefore. Throwing money at instances of misalignment can be wasteful and misguided if the cause of misalignment is unrelated to the level of IT investment. Shpilberg *et al.* (2007) note that focusing on alignment as a remedy for IT-related problems can be equally wasteful.

Industry publications such as *CIO Magazine* and *InformationWeek* have dedicated cover stories, articles, and blogs to the challenges of achieving and sustaining IT alignment (Moore, 2012). Annual CIO surveys conducted by the Society for Information Management (SIM) repeatedly put IT alignment among the top three challenges facing IT executives (Luftman *et al.*, 2013). The latest 2014 SIM survey identifies IT alignment as the third most important 'priority' or 'worry area' for CIOs (Preston, 2014). A surprising aspect of this research is that 81% of respondents said they agree with the premise that 'IT is aligned with the business'. This result highlights a disparity between managerial perception and the measurement of IT alignment, prompting *InformationWeek* to conclude that a better way to define and measure IT alignment is required (Preston, 2014). They recommend that researchers focus on measurable goals such as business value or customer satisfaction rather than on internal performance indicators that often lack practicality.

Concerns with the form and function of strategic IT alignment are not new. Twenty-five years ago – as the building blocks of alignment were emerging – Venkatraman and Prescott (1990) claimed that the choice, construction, and use of the various alignment measures are rarely acknowledged by researchers. Recognizing the many points of contact between business and IT, strategic IT alignment has been defined and measured in a multiplicity of ways. The net result of this effort is essentially a *family* of IT alignment constructs, manifested in a variety (and sometimes a confusion) of words and phrases applied by scholars to discuss alignment either as a realized or intended phenomenon. For example, strategic IT alignment has been defined using such distinct terms as ‘matched with’, ‘in harmony with’, ‘complement each other’, ‘contingent upon’, and ‘congruent with’ or more simply as ‘aligned’, ‘fit’, ‘support’, ‘integrated’, ‘synergy’, ‘linked’, or ‘co-aligned’. Guidelines for translating these verbal statements into operational measures and specific empirical tests are not universally available. Further, distinct construct attributes (e.g., fit, support, congruence) have been employed to investigate alignment between several different business and IT objects including realized strategies, strategic plans, business processes, and associated IT concepts such as IT use, IT strategy, IT capabilities, and IT portfolio (Queiroz, 2014). The growing family of alignment constructs, lack of coherence in the way that alignment is conceptualized and measured, combined with mixed results reported in the literature (Palmer and Markus, 2000; Byrd *et al.*, 2006; Tallon and Pinsonneault, 2011; Yayla and Hu, 2012), reignites the long familiar debate between holistic theories (that adopt umbrella constructs to keep the field relevant and in touch with the ever-changing world of IT practice) and reductionism in scientific explanation (that uses individualistic theories to satisfy a series of rigorous standards for establishing desired levels of validity and reliability).

Conceptual and measurement confusion between holistic and reductionistic perspectives is common (Gerdin and Greve, 2004; Chan and Reich, 2007), suggesting that there may be opportunities to identify missing links in the IT alignment process chain or to more broadly consider the development of a more inclusive definition of IT alignment. At the same time, research is beginning to uncover cases where strategic IT alignment has no direct effect on overall firm performance and where the first order effects of IT alignment manifest on specific intermediate performance variables such as process agility (Tallon and Pinsonneault, 2011). Some have gone so far as to claim that alignment has become so institutionalized that it is no longer a source of differentiation of firm performance that it once was (Palmer and Markus, 2000). So while we might conclude that IT alignment still matters, perhaps it matters in new and different ways that present opportunities for future research and debate. The fact that IT alignment remains a top priority for CIOs compels the academic community to consider taking a fresh approach to the issue of alignment.

The remainder of this Introduction to the Special Issue on Strategic IT Alignment is structured as follows. First, we provide a brief historical review of the strategic IT alignment literature over the past 25 years. This account begins with the seminal work conducted under the Management in the 90s (MIT90s) umbrella before turning to the major alignment perspectives that have emerged over the last 25 years. To structure the discussion, we focus on theory,

conceptualization, and measurement of strategic IT alignment. After this, we transition to a more contemporary perspective that reflects the changing role of IT in modern businesses. We consider three challenges that will influence the research agenda around strategic IT alignment in the coming years. Finally, we describe how the three papers in this Special Issue can help to advance this research agenda.

The genesis of strategic IT alignment

Research on strategic IT alignment first emerged in the late 1980s as part of the ‘MIT90s’ project, led by Michael Scott-Morton at the Center for Information Systems Research (CISR) at MIT. This multi-year project, extending from 1984 to 1992, involved 10 (later expanded to 12) of what were then the largest or most prominent users of IT in Europe and the United States (Arthur Young & Co., British Petroleum, BellSouth, Cigna, Digital Equipment Corp., Kodak, GM, ICL, MCI, US IRS, and the US Army). From this effort emerged the MIT90s Framework: a model depicting a series of relationships between five critical constructs – strategy, structure, technology, people, and management processes. The goal of the MIT90s framework was to examine IT-led organizational transformation. As such, in the book that emerged from the MIT90s project (Scott-Morton, 1991), each chapter looked at relationships between different pieces of the framework against a background of organizational change and rapid IT innovation. The now classic Strategic Alignment Model emerged from that part of the MIT90s framework that looked at the link between business strategy, IT, structure, and management processes (Venkatraman, 1991). A series of three MIT Sloan School/CISR working papers emerged at the same time, essentially looking at the cross-domain linkages between different quadrants in the Strategic Alignment Model (Henderson and Venkatraman, 1989; Henderson and Venkatraman, 1990) and highlighting results from a survey linking IT business partnerships, IT planning, and strategic planning to four measures of fit (Henderson *et al.*, 1992).

Certainly other researchers were actively considering the link between business and IS strategy at the same time as the MIT90s work (or even earlier), but their focus was primarily on IT planning whereas the Strategic Alignment Model encompassed IT planning *and* execution (King, 1978; King and Cleland, 1978; King and Zmud, 1981; McFarlan *et al.*, 1983; Pyburn, 1983; Parker and Benson, 1988; Earl, 1989; Raghunathan and Raghunathan, 1989; McLean and Soden, 1997). Although McFarlan’s strategic grid is perhaps the best known IT framework from that era, it has arguably – certainly on the basis of citations in the IT academic literature – failed to achieve the same level of notoriety and popularity as Henderson and Venkatraman’s research on the Strategic Alignment Model.

As the MIT90s research became more accessible to the public and to CISR sponsors, the MIT90s Framework and the Strategic Alignment Model in particular was picked up and used by IBM in high-level seminars at their New York Executive Conference Center. The Strategic Alignment Model was later used in shaping IBM’s IT Strategy Consulting Practice; Dr. Jerry Luftman (then an IBM consultant and later a professor at Stevens Institute of Technology) used the model to help managers think about IT strategy. As such, the Strategic Alignment Model was never intended as a way to measure IT alignment but rather as a way to think about IT

strategy and whether the business strategy informed the IT strategy or vice versa (a somewhat radical idea at the time). Later, when Luftman was asked to develop a special issue of the *IBM Systems Journal* – notably on the subject of IT and organizational transformation rather than IT alignment – he invited various academics and practitioners who had worked with IBM. From this invitation emerged the now classic paper by Henderson and Venkatraman alongside others by such names as Andy Boynton, Marianne Broadbent, Blake Ives, Sirkka Jarvenpaa, Benn Konsynski, Dick Mason, and Peter Weill. Luftman later produced an edited book on the subject of ‘Strategic Alignment in Practice’ featuring work by many of the same authors from the 1993 Special Issue of the *IBM Systems Journal* (Luftman, 1996).

While the notion of IT and organizational transformation was widely acknowledged at the time – with the seminal work of Hammer and Champy (1993) appearing at the same time – the notion that IT could lead, rather than react to business strategy, was both new and controversial. The net result was a transition in the role of IT from tactical tool to strategic resource (Scott-Morton, 1991; Sauer and Yetton, 1997). By the time the IT productivity paradox had been debunked by Brynjolfsson and Hitt (1996), the focus of the IT business value literature shifted from asking whether IT pays off to what makes IT pay off – namely the management practices and other organizational variables like alignment that contribute to IT business value (Brynjolfsson and Hitt, 1995). Later, as research by Reich and Benbasat (1996) and Chan *et al.* (1997) appeared attesting to the value created by IT alignment, the scene was set for other researchers to dig deeper into the antecedents, composition, and consequences of strategic IT alignment.¹

The IT alignment construct

The notion in Henderson and Venkatraman (1993) that alignment emerges from some form of fit between business strategy, IT strategy, organizational infrastructure and processes, and IT infrastructure and processes, has proven difficult to operationalize and measure.² Recognizing this, the earliest research sought to define alignment in broader terms as, ‘the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans’ (Reich and Benbasat, 1996: 56). This conceptualization formed the basis for subsequent studies where different types of alignment were investigated. Specifically, researchers began to distinguish between alignment in terms of strategic plans (what firms intend to do) and alignment in terms of realized strategy (what firms actually do). As such, Sabherwal and Chan (2001) argue that their conceptualization of alignment focuses on realized rather than intended strategies. In contrast, Kearns and Lederer (2003) focus on business and IT plans to investigate intended IT alignment. In an attempt to reconcile these two perspectives, knowing that differences routinely arise between emergent and intended strategies (Mintzberg and Waters, 1985), Chan and Reich (2007, 300) adopted a broader definition of strategic IT alignment as ‘the degree to which the business strategy and plans, and the IT strategy and plans, complement each other’.

Given the differences between planned and realized strategies, strategic IT alignment can be seen in two distinct ways. First, the role of IT in supporting actual business strategy is a

function of the current portfolio of IT applications rather than written plans. Notably, Oh and Pinsonneault (2007) conceptualize IT alignment based on a portfolio of different IT applications needed to support actual business strategies. Second, researchers have argued that, ‘IT is deployed in support of specific activities and processes, and, therefore, the impact of IT should be assessed where the first-order effects are expected to be realized’ (Ray *et al.*, 2005: 626). Accordingly, research began to explore the performance effects of alignment between IT and business strategy at the process level, consistent with prior research on the effects of IT at the process level. As such, Tallon (2008) identifies that firms pursuing an operational excellence strategy emphasize alignment in supplier relations and production/operations while those firms with a strategy of customer intimacy emphasize alignment in marketing, sales, and customer relations. Tallon (2012) further shows how the effects of strategic alignment in a given process can spillover into other processes further down the value chain. By implication, the downsides of misalignment where IT fails to provide adequate support for key business activities can create significant performance issues elsewhere in the value chain.

These advances in construct conceptualization – as we move from planned to actual strategies for a range of different strategies and as we move from the firm level to either the process or task level – have been accompanied by changes in the way alignment is measured and interpreted (Venkatraman, 1989; Bergeron *et al.*, 2001; Chan and Reich, 2007). If construct conceptualization delineates the theoretical phenomenon of interest, changes in conceptualization modify the underlying phenomenon in important ways – often making it difficult to compare results across studies that considered different measures. Not surprisingly, over the last 25 years as the study of IT alignment broadened and deepened in important ways, the literature has devised various proxy measures to assess the extent of IT alignment at a point in time.

Measures of the alignment construct

Contingency and *configurational* theories – where researchers assert that superior performance is attributable to proper congruence or fit between structural design and contextual variables – dominate the alignment research (Venkatraman, 1989; Iivari, 1992; Umanath, 2003; Chênevert and Tremblay, 2009). This perspective assumes that misalignment or misfit degrades performance (Iivari, 1992; Bergeron *et al.*, 2001; Meilich, 2006). Realizing that organizations are subject to the pulls and pressures of multiple contingency forces (Sambamurthy and Zmud, 1999), much attention has traditionally been given to indirect, rather than direct, measures of IT alignment. We describe both direct and indirect measurement approaches below.

Indirect measures of IT alignment

The indirect measures of fit proposed by Venkatraman (1989) have been frequently applied by IT researchers to calculate the extent of alignment between business and IT strategy. Venkatraman proposed a framework that comprises six distinct perspectives from which fit might be operationalized: *moderation*, *mediation*, and *profile deviation* as criterion-specific approaches, and *matching*, *covariation*, and *gestalts* that are specified without reference to a criterion or dependent variable such as business

performance. The matching, moderation, and profile deviation measures are the most common approaches used to assess IT alignment for inclusion in IS research (Cragg *et al.*, 2002; Tallon, 2008; Tallon and Pinsonneault, 2011).

Critically, these forms of contingency fit are neither interchangeable nor complementary (Iivari, 1992; Gerdin and Greve, 2004; Meilich, 2006). Notwithstanding their popularity, matching, moderation, and profile deviation differ in terms of their underlying conceptual assumptions about what constitutes fit and how it should be operationalized (Venkatraman, 1989; Gerdin and Greve, 2004). Each is different in theory and so it comes as no surprise that the application of multiple measures with the same measures of IT and business strategy could lead to different and perhaps even contradictory findings (Drazin and Van de Ven, 1985; Edwards, 1994). For instance, Cragg *et al.* (2002) found a positive effect of alignment on business performance when using a moderation measure but then failed to uncover a complementary result when matching was used instead. Chan *et al.* (1997) report similar results. Meanwhile Tallon (2008) found that profile deviation and moderation-based measures of IT alignment at the process level yielded consistent results in terms of their ability to predict perceived IT business value across a range of primary processes.

This is an important characteristic of contingency fit research that might help explain the mixed results reported in the literature (Chan *et al.*, 1997; Palmer and Markus, 2000; Cragg *et al.*, 2002; Byrd *et al.*, 2006). For example, when using matching-based measures of alignment, Palmer and Markus (2000) were unable to find a correlation between alignment and firm performance for companies in the specialty retail space. One could argue that these results contradict Chan *et al.* (1997) who, when using moderation-based scores, found a positive link between alignment and performance. These different results can be explained by contingency theory since different forms of contingency fit are not explicitly interchangeable. Instead, knowledge accumulation takes place *within*, rather than *across*, fit perspectives (Gerdin and Greve, 2004). This implies that scholarly efforts to build on the work of others will be challenging when contingency fit approaches are used to measure alignment. It also implies that it may be harder over time to reconcile the results from studies that use different measures. As such, the study of strategic IT alignment could splinter into smaller subfields that develop around individual contingency measures. The concept of a cumulative research tradition that spans the entire body of work on strategic IT alignment may, therefore, be elusive until such time as a more commonly accepted measure emerges or a way is found to reconcile the various indirect measures that crisscross the current literature.

Direct measures of IT alignment

As an alternative to indirect measures of alignment that are based on separate assessments of strategy and IT, the literature has recently drawn attention to measurement scales to capture the state of IT alignment directly (Preston and Karahanna, 2009; Yayla and Hu, 2012; Gerow *et al.*, 2014). Researchers have developed Likert-type scales to ascertain the perceived extent of alignment between IT and business strategies (Gerow *et al.*, 2014), between business and IT plans (Kearns and Lederer, 2000; Kearns and Lederer, 2003), and in terms of shared knowledge and understanding

between business and IT executives as to the role of IT in the organization (Preston and Karahanna, 2009). Evidence suggests that these direct measures of alignment are robust and appropriate for testing theories about the antecedents (Preston and Karahanna, 2009) and outcomes of alignment (Yayla and Hu, 2012). For instance, Preston and Karahanna (2009) find that shared understanding about the role of IT in the organization affects IT alignment. Lastly, in terms of direct measures, Bradley *et al.* (2012) find that IT alignment has a positive and direct effect on firm agility, while Yayla and Hu (2012) and Gerow *et al.* (2014) find that greater alignment enhances firm performance.

Future research agenda: key themes

While the study of strategic IT alignment has made significant progress in the last quarter century since the work of Henderson, Venkatraman, and others first emerged, there remains several important research questions that are still relatively unexplored. A lot can happen in 25 years. The fact that IT alignment is a perpetual priority for CIOs confirms that alignment is difficult but it also shows that alignment is a moving target. IT is in a constant state of flux as new innovations enter the mainstream and as legacy systems are extended or retired. Business strategies are equally undergoing tremendous change as organizations embrace globalization and the need for greater digitization and agility. Rather than evidencing the maturation claim in Palmer and Markus (2000, 257) that 'strategic alignment has become [so] institutionalized [that it] ceases to be a differentiating factor in firm performance', it may be more important now than ever to maintain IT alignment out of fear that misalignment could lead to a decline in firm performance and an erosion in the state of market competitiveness and business agility.

We see a continuing need for researchers to adapt and extend our knowledge of what it means for IT to be aligned with business. This will require fresh thinking as the extant IT alignment paradigms are a product of a simpler time when IT was less complicated and business strategy was more stable. To reflect the reality of IT and business strategy in modern society, a new approach is needed to account for the ways that businesses are increasingly attempting to exploit synergies between corporate, strategic business unit, and functional-level activity. As a departure from extant research that conveniently restricts IT alignment research to single strategy or single segment businesses (Sabherwal and Chan, 2001; Oh and Pinsonneault, 2007; Tallon and Pinsonneault, 2011), research has recently attempted to conduct the type of multi-level or cross-level analysis that is required to fully embrace contemporary organization structure and operating models (Fonstad and Subramani, 2009; Queiroz, 2014; Reynolds and Yetton, 2015). While we have learned much about alignment between IT and a single business strategy (Chan and Reich, 2007), further research is warranted to enhance our understanding of the multidimensional nature of strategic alignment in contemporary organizations with more complex structural forms (Fonstad and Subramani, 2009).

As we look to the future, we see three key themes that will guide future research on IT alignment. These themes are: (1) the *micro-foundations* of IT alignment, (2) the rise of *digital business strategy*, and (3) *innovation ecosystem* and value

co-creation. These three themes form a starting point for developing a rich set of questions to guide future IT alignment research in academia and to direct practicing managers and executives to the challenges and opportunities that lie ahead for IT alignment. These themes emerge from our informal conversations with academic and IT industry thought leaders in recent years, from emergent trends and themes in the broader IS literature, and from the many papers submitted to this special issue and our subsequent interactions with authors, reviewers, and special issue associate editors.

Micro-foundations of IT alignment

Scholars have increasingly come to see alignment as resulting from choices that individuals make within an ever changing corporate environment. If these choices can be identified, a reasonable next step is to expose the behaviors that precede them. This line of thought is consistent with the micro-foundations theory of management where analysis is conducted at the behavioral strategy level to integrate the actions of goal-seeking economic agents (Teece, 2007; Devinney, 2013). This approach can yield more actionable insights as it directs researchers to look across levels of analysis within the organization. Our ability to tie different levels of analysis together calls for a broader, integrative theory of IT alignment, something that goes beyond prior multi-level discussion (Klein *et al.*, 1999). This is not a trivial undertaking, however, as different levels of analysis often describe different worlds with different vocabularies (Kincaid, 1996). Just as the language that describes alignment at the firm level contrasts with that used to describe alignment at the process level, so too are there key differences between how alignment is described at the corporate, strategic business unit, and function levels. These differences reflect the fact that the nature of alignment phenomena changes whenever distinct levels of analysis are considered.

The micro-foundation concept remains controversial and subject to considerable scholarly debate (Devinney, 2013). To advance the micro-foundations notion, scholars would need to consider the way that strategic choices can be aggregated across actors and time to predict performance (Foss and Lindenberg, 2013). This offers a compelling logic for alignment scholars since the *sine qua non* of micro-foundational research is aggregation (Barney and Felin, 2013). By design, micro-foundation analysis is concerned with how micro- or individual-level factors aggregate to higher levels. In the context of strategic IT alignment, this allows researchers to look at how function-level decisions align IT with key business activities and how these function-level outcomes then aggregate to the firm level. It may also mean that a decision to continue emphasizing IT alignment at the corporate or firm level overlooks the argument that this is nothing more than an aggregation of IT alignment outcomes at lower levels within the firm. It follows that researchers might miss a wealth of disaggregated effects that could provide new and useful insights by continuing to focus on alignment between IT and business strategy at the corporate level exclusively.

Several questions need to be considered regarding the implications of using different theories and findings across multiple levels of analysis since outcomes from one level could aggregate or spillover to another level. Prior research suggests that individual managers are cognitively limited (Bond *et al.*,

2008), subject to different biases such as over-optimism, recency, exaggeration, and self-preservation while the literature on IT alignment does not appear to be restricted in the same manner. The evolving IT alignment literature has yet to ask whether alignment can be achieved or whether the right 'type' of alignment can be achieved when the individual actions of decision makers in different parts of the organization vary. If there is disagreement among management as to the strategic direction of the organization, what might this say about the state of IT alignment in the company? It could mean perhaps that instances of over-reaching or temporary alignment, as discussed in Sabherwal *et al.* (2001), are more common than one might expect. Advancing the micro-foundations of IT Alignment requires greater understanding of such questions as:

- Why is it that the IT alignment literature is not constrained by the same biases and risk aversion that characterize behavioral theories of the firm? If the measurement of IT alignment is based on perceptual measures of IT and business strategy and perceptions are potentially flawed, alignment measures could be equally flawed.
- Can IT be aligned when the behaviors of individual stakeholders (corporate and business unit IT management, service providers, and IT outsourcers) do not show the same proclivity toward the business strategy? IT managers in the same firm might not see business strategy in the same way.
- How could tensions that arise between corporate and business unit management affect the ability of organizations to achieve and maintain alignment at both the corporate and business unit levels?

The rise of digital business strategy and the implications for IT alignment

New ITs are fundamentally altering traditional business strategies, enabling organizations to reach across boundaries of distance, time, and function (Kohli and Grover, 2008; Rai *et al.*, 2012; Bharadwaj *et al.*, 2013). The rise of digital business strategy – principally, strategy formulated and executed by leveraging digital resources (Bharadwaj *et al.*, 2013), suggests that 'IT precedes rather than aligns with corporate strategy' (Wheeler, 2002: 125). The implications of net-enabled businesses – as some researchers have revealed – is a reduced role for strategic alignment but we feel this is somewhat short-sighted (Bharadwaj *et al.*, 2013). The problem lies in the definition of strategic IT alignment as the degree of IT support for business strategy. This definition implies that IT has always been subservient to, or lagged behind, business strategy. In these instances, misalignment is usually attributable to insufficient or misdirected IT investment where the level of IT investment might be on target but organizations have simply invested in the wrong IT. If the definition of IT alignment is revised to reflect both the extent of IT support for business strategy *and* the extent to which IT is deployed/leveraged in facilitating current and future business strategy, it may be possible to spot instances of misalignment that are because of underutilized IT capabilities (Tallon, 2000; Tallon and Kraemer 2003). This is consistent with prior calls in the literature to explicitly account for the bidirectional link between business and IT as articulated in the original work

by Henderson and Venkatraman (1993) and what Rockart *et al.* (1996) and others term two-way strategic IT alignment (Rockart *et al.*, 1996; Hirschheim and Sabherwal, 2001; Philip and Booth, 2001).

As organizations digitize their entire businesses and build digital options to capitalize on future opportunities, business processes that execute business strategy are becoming progressively dependent on IT (Bharadwaj *et al.*, 2013). This would then imply that executing digital business strategy is dependent on the ability of firms to leverage IT through business processes, in which case *two-way alignment* becomes a key mechanism through which IT creates value. An organization that holds IT-based digital options but who then elects to not exercise those options – perhaps because of insufficient market opportunities or simply because of poor managerial decision making – would be exposed to misalignment and to the prospects of sub-par firm performance (Sambamurthy *et al.*, 2003). Consequently, we see a rationale for including options thinking in a discussion of what organizations can do to create and sustain IT alignment (Fichman, 2004). Organizations that are able to achieve perfect alignment between IT and business strategy have neither IT shortfall (IT fully supports business strategy) nor IT underutilization (all digital IT options are exercised).

The rise of digital business strategy also focuses attention on the decision variables that contribute to IT alignment. Contemporary organizations are changing the way they utilize IT in combination with products and services (Queiroz and Coltman, 2014). Yet we know little about whether changes in the way organizations use IT affect what it means to be aligned. Organizations are facing tremendous pressures to buy commodity technologies rather than build proprietary systems. This does not mean that IT alignment has ceased to matter but it does mean perhaps that IT alignment can be easily replicated by competitors.

The existing literature has repeatedly acknowledged the impact of social alignment on intellectual alignment (Reich and Benbasat, 1996; Reich and Benbasat, 2000; Kearns and Lederer, 2003; Kearns and Sabherwal, 2007) but beyond that there is still the question of what other variables might hinder or facilitate the pursuit of IT alignment. In recent years, researchers have indicated that IT governance might affect IT alignment if it can help to develop a system of accountability that surpasses a simple focus on IT planning (Weill and Ross, 2004; Wu *et al.*, forthcoming). IT governance transcends the issue of structure – centralization or decentralization (Brown and Magill, 1994) – to more existential questions around application ownership, security, exception management, and IT funding. For instance, the digitization of business strategy brings with it increased privacy and security concerns and IT governance mechanisms need to account for and adapt in response to these concerns. Gupta and Zhdanov (2012) note that increased security and privacy concerns are motivating an interesting emergent phenomenon: the outsourcing of information/IT security. However, the IT literature has yet to investigate whether organizational attempts to bolster security affect alignment and whether the decision to outsource security has any impact on the ability of firms to achieve or sustain alignment. Further study of the path from IT governance to IT alignment can help to determine significant IT variables that will likely consume management's attention in future years. With the rise of digital business strategy,

opportunities arise to advance our understanding of alignment in specific ways:

- The logic of digital business strategy argues that IT alignment may become less meaningful since IT is the strategy. Therefore, IT and business strategy are indistinguishable. Is this really the case?
- If the presence of IT shortfall and IT underutilization affect the ability of organizations to execute their digital business strategies, what are the implications of two-way strategic alignment for firm performance? Is the link between two-way strategic alignment and performance moderated by the level of strategy digitization?
- How do forces (and mandates perhaps) to enhance security in a digital world affect IT alignment?

Innovation ecosystem and IT alignment

It is hard to imagine any issue more central to an organization's future competitive position than innovation (Drucker, 2006). However, any given innovation in a modern multi-process organization will rarely stand alone. Rather, new value propositions become possible when suppliers, business partners, and customers work together to co-create value (Spohrer and Maglio, 2008; Ordanini and Parasuraman, 2011). Success depends upon an innovation ecosystem that comprises several partners in multi-organizational relationships to develop new products, services, and processes (Adner, 2012). Consider for example the seamless integration of Apple's iPod player with iTunes software and a growing catalog of on-demand and relatively inexpensive music and video content. Using a tightly integrated digital IT platform, Apple (and partners) made it simple and easy for customers to enjoy online content by seamlessly downloading songs, books, and applications using different devices, ensuring that distinct business functions inter-operate as the business grows with complementary products and services.

The implications of IT innovation ecosystems are visible in the proliferation of outsourcing, cloud technologies, software-as-a-service, and the demand for seamless interoperability of products and information flows that are increasingly central to business strategy and its operations. Future IT alignment research will need to evolve from a singular firm perspective to focus more on how IT platforms support (or sometimes hinder) the joint creation of value in innovation ecosystems. IT-based platforms are ideally positioned to support sharing of assets, development of new capabilities, knowledge sharing, and IT governance (Grover and Kohli, 2012). By emphasizing value co-creation in innovation ecosystems, IT alignment researchers will need to focus more on how *different* companies with *different* IT resources and capabilities can interoperate to ensure that all participants in the ecosystem capture their representative share of any newly created business value.

Business models based on IT do not need to be hosted or owned by any specific organization and yet the implications for IT alignment of such concepts as open innovation, value networks, and platform leadership have yet to be widely discussed. From an IT alignment perspective, these developments create a degree of complexity when organizations no longer need to own a process or the IT that supports that process. Regardless of the ownership question, the ensuing IT alignment can still drive firm performance. Evidence in the

literature that IT alignment does not directly affect firm performance but rather impacts intermediate variables such as process agility is reflective of this trend (Tallon and Pinsonneault, 2011). If this trend continues, IT alignment will increasingly become a means to an end rather than an end in itself.

This discussion on innovation ecosystems and outsourcing implies that the traditional boundaries of the IT function are blurring. The next phase of IT alignment research will need to explicitly account for IT interdependencies associated with coordinating complementary innovators. Kohli and Grover (2008) refer to this as 'IT-based co-creation of value' and argue that the way IT creates value will increasingly be based on actions of multiple parties. CIOs and other IT practitioners readily acknowledge how difficult it can be to complete projects on time, on budget, and within scope, even when partners are not involved. Under these pressures it can be tempting for IT practitioners to focus their attention on internal execution. However, this internal focus is dangerous since it can quickly lead to blind spots when organizations are dependent upon an innovation ecosystem (Adner, 2012). Thus, the IT alignment challenge is likely to get a whole lot harder as IT practitioners seek to incentivize all parties that partake in co-creation efforts and to mitigate contractual hazards that can arise when asset-specific investments are made under conditions of growing uncertainty and bounded rationality (Williamson, 1985). Examples of questions that could help to advance our understanding of alignment in innovation ecosystems include the following:

- How can multiple participants in the ecosystem align different IT resources to equitably partake in value co-creation?
- Where will the individuals with the most knowledge about how to achieve IT alignment reside in the innovation ecosystem and how transferrable is their knowledge within the ecosystem?
- As IT becomes more embedded within the ecosystem, how can managers enhance alignment with partners while ensuring that they do not behave opportunistically? In the same vein, how might the effects of IT alignment on one participant spillover to other participants within the ecosystem?
- While IT alignment is associated with improved agility in standalone organizations, how does the locus of IT alignment in an ecosystem impact agility in individual firms or across the ecosystem?

Guide to the papers in the special issue on strategic IT alignment

The papers in this special issue on IT alignment offer valuable insights into the key directions we have discussed in this paper. Collectively, they extend our understanding of alignment and how it creates value for organizations. This special issue comprises three standalone research papers. First, echoing the core theme of IT alignment in modern organizations that embrace diversification, the article by Reynolds and Yetton, titled 'Aligning Business and IT Strategies in Multi-business Organizations', investigates the IT alignment challenge in organizations where business strategies are developed at the corporate level, within individual strategic business units, and across the corporate investment cycle. The authors

make a persuasive case for how IT alignment adds value through different strategic drivers. Second, the paper by Schloser, Beimborn, Weitzel and Wagner, titled 'Achieving Social Alignment between Business and IT: An Empirical Evaluation of the Efficacy of IT Governance Mechanisms', addresses the question of how can firms improve social alignment between their business and IT units. Their analysis of 132 US banks reveals a variety of IT governance mechanisms that shape social alignment. Finally, the article by Karpovsky and Galliers, titled 'Aligning in Practice: From Current Cases to a New Agenda', provides a unique review of the IT alignment literature based on a case method approach. What is unique about this work is its focus on the practices of aligning IT based on what IT managers do on a daily basis. These three papers touch upon useful research themes that offer new insights into the evolving IT alignment literature and opportunities for future work.

Summary and path forward

This special issue began with the premise that it was time to refresh our understanding of IT alignment. We begin with an assessment of what we know about IT alignment based on a quarter century of research. This discussion examines how IT alignment has been conceptualized and measured as well as identifying enduring challenges for developing a cumulative body of research. Next we explore the future research agenda based on three themes. These prospective paths for future strategic IT alignment research contain many challenges but they also indicate that there is much that we still do not know – even after 25 years of research – about IT alignment. Strategic IT alignment has a bright future and will likely remain a key area of interest for practitioners and academics wishing to add to the growing IT alignment literature.

Notes

- 1 We note that research by Blaize Reich that resulted in Reich and Benbasat (1996) and by Yolande Chan that led to Chan *et al.* (1997) was first published in their respective Ph.D. theses in 1992. Work by Marianne Broadbent that led to a paper with Peter Weill in the same issue of the *IBM Systems Journal* as Henderson and Venkatraman was first published in her Ph.D. thesis in 1990 under the title 'The Alignment of Business and Information Strategies'. As such, while we might point to work by Henderson and Venkatraman as one of the foundations of the field, we must equally recognize the essential contributions of what were then Ph.D. students in different parts of the world.
- 2 The authors are aware of only one effort in the mid-1990s to measure strategic IT alignment using each of the four quadrants in the Henderson and Venkatraman (1993) model. That work was led by Dr. Jim Thomas (PSU) as part of a collaborative effort with consultants at IBM Global Services, although, to date, it has never been published.

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