Conceptualizing the Dynamic Strategic Alignment Competency

Jeff Baker
American University of Sharjah
jbaker@aus.edu

Donald R Jones
Texas Tech University
donald.jones@ttu.edu

Qing Cao
Texas Tech University
qing.cao@ttu.edu

Jaeki Song
Texas Tech University, Sogang University
jaeki.song@ttu.edu

Abstract

This essay addresses the question, "How can strategic alignment that is sustained over time be conceptualized and quantified?" We build on the Dynamic Capabilities Framework and suggest that an organization's ability to achieve a high degree of alignment between its IT strategy and its business strategy is an enduring competency that is a source of competitive advantage. We couple this theoretical understanding of how strategic alignment provides value with extant research to explain an approach to measuring an organization's dynamic strategic alignment competency. Our measurement approach considers (1) the degree of alignment at a given point in time, (2) the organization's history of alignment, and (3) the maturity of the business processes that enable IT and business strategies to co-evolve. Our paper contributes to research on strategic alignment in two ways. First, we address a stated need for more substantial theory to undergird strategic alignment research by highlighting and building upon the Dynamic Capabilities Framework. Second, we move beyond static, single-time-period examinations of alignment to explain a dynamic approach to alignment, one that includes an operationalization of the dynamic strategic alignment competency. In sum, we argue that the dynamic strategic alignment competency is an enduring organizational competency built on organizational processes and routines that provides a source of competitive advantage.

Keywords: Dynamic Capabilities Framework, Strategic Alignment, Dynamic Capabilities, Competitive Advantage, Strategic IS Management, Fit.

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1. Introduction

The alignment of IT strategy with business strategy is a topic of enduring importance in IS research. Strategic alignment has remained among the top concerns of executives for over two decades (Chan & Reich, 2007; Luftman & Ben-Zvi, 2010; Niederman, Brancheau, & Wetherbe, 1991), and has consistently been a focus of researchers (see Chan and Reich, 2007 for a review). Considerable evidence demonstrates that firms' business and financial performance can be improved when organizations are able to align IT strategy with business strategy (Chan, Sabherwal, & Thatcher, 2006; Reich & Benbasat, 1996; Sabherwal & Chan, 2001), and interest in the topic remains strong.

Continued interest in the topic of strategic alignment is driven in part by the acknowledged need to understand alignment in a dynamic environment (Hirschheim & Sabherwal, 2001; Luftman & Brier, 1999; Sabherwal, Hirschheim, & Goles, 2001). Much extant research treats alignment as a static construct, and numerous approaches to quantifying static, cross-sectional alignment exist (e.g., Venkatraman, 1989). Extensions to this research are sought, and some researchers have begun to conceptualize the dynamic nature of alignment (Benbya & McKelvey, 2006; Sabherwal et al., 2001), but dynamic operationalizations of strategic alignment have yet to be described (Bergeron, Raymond, & Rivard, 2001; Venkatraman, 1989). The interest in strategic alignment is also driven by the need for more robust theoretical underpinnings for this area of research. It has been observed that much alignment research is built upon concepts from strategic management and contingency theory, which do not richly explain the mechanisms and processes by which alignment is fostered and competitive advantage is created. Research is sought that is based upon more explanatory, established theories from reference disciplines or from IS itself (Chan & Reich, 2007). Theoretical refinement is needed to describe the concept of alignment and measure it, in order to eventually elucidate strategic alignment's larger role in providing value to the organization.

The purpose of this essay is to conceptualize what we refer to as the dynamic strategic alignment competency and to demonstrate the operationalization of our approach. We first provide a theoretical explanation for how sustained strategic alignment provides value to an organization by viewing extant research through the lens of the Dynamic Capabilities Framework (Teece, Pisano, & Shuen, 1997). We explain that the ability of an organization to develop a strategic planning process that fosters alignment along several key dimensions is an enduring competency that can be a source of competitive advantage. This theoretical description of strategic alignment as a dynamic organizational competency is the first contribution of our paper. Second, we build on our theoretical explanation to provide a measure of the dynamic strategic alignment competency. Our measure incorporates the degree of alignment, an organization's history of alignment, and the maturity of the processes that enable IT and business strategies to co-evolve. This measure integrates research findings that describe the antecedents and outcomes of strategic alignment with additional research that explains the processes by which alignment is achieved. Our measure provides a theory-linked metric for researchers, and can also be used by practitioners to evaluate their firm's alignment and the processes that support it. This measure of dynamic strategic alignment competency is the second contribution of our paper.

The paper proceeds as follows. In the Theoretical Framework section, we review research on strategic alignment and propose that the Dynamic Capabilities Framework (Teece et al., 1997) can be used to explain why the ability to develop strategic alignment is an enduring organizational capability and a potential source of competitive advantage. In the subsequent section, we conceptualize the dynamic strategic alignment competency and move to a discussion of how to measure it. We start with a static, cross-sectional measure of the degree of alignment. Then, we expand our conceptualization to incorporate both the historical track record of the organization with regard to alignment and the maturity of the processes that develop and maintain strategic alignment. These three elements – static alignment, historical alignment, and the maturity of alignment processes – become building blocks in a unitary measure of an organization's dynamic strategic alignment competency. We also demonstrate how our measure can be used to assess an organization's dynamic strategic alignment competency. We review our contributions and note their implications for researchers and practitioners in the Discussion section before stating our conclusions.

2. Theoretical Framework

Alignment is a broad topic, one that has arisen from the idea that organizations should strive to "match," "align," or "fit" their organizational resources to the competitive context in which the organization is situated (Andrews, 1971; Chandler, 1962; Venkatraman & Camillus, 1984).[1] A general definition of alignment has been offered as "the degree to which the needs, demands, goals, objectives, and/or structure of one component are consistent with the needs, demands, goals, objectives, and/or structure of another component" (Nadler & Tushman, 1980, p. 40). Several specific types of alignment have been developed; these various types of alignment address not only the organization's strategy and competitive context, but also the organization's resources, the IT department's strategy, and how the IT department's resources have been developed.[2]

2.1. Strategic Alignment Literature

The focus of this paper is strategic alignment, a type of alignment that examines the link between IT strategy and business strategy (Sabherwal et al., 2001). Strategic alignment is described as "...the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans" (Reich & Benbasat, 2000, p. 82). We affirm this definition and utilize it in this paper as our definition for strategic alignment. Others provide similar descriptions for strategic alignment, including "applying IT in an appropriate and timely way and in harmony with business strategies" (Luftman & Brier, 1999, p. 109), and "using IT in a way consistent with the firm's overall strategy" (Palmer & Markus, 2000, p. 242). Much of the work on alignment in IS has examined strategic alignment, and it remains a major focus of IS researchers (Agarwal & Sambamurthy, 2009; Chan & Reich, 2007; Oh & Pinsonneault, 2007). Empirical work and case studies have repeatedly shown that business and IT performance improve when firms experience strategic alignment (Chan & Reich, 2007). This relationship is explained by noting that when alignment occurs, IT is used in a more focused and strategic manner, thus improving organizational performance (Chan et al., 2006).

Research into strategic alignment is not without criticism, however. Some have argued that strategic alignment is too mechanistic, belonging to an era of greater stability in the business world. The development of IT strategy in response to business strategy is described as inappropriate for today's dynamic and hypercompetitive business world. Instead, a fusion of business and IT strategies, where simultaneous, rather than sequential, strategic development occurs, is recommended (Smaczny, 2001). This emphasis is echoed by others who argue for the "co-evolution" of IT and business strategies (Agarwal & Sambamurthy, 2002; Benbya & McKelvey, 2006). This co-evolution is necessitated by rapidly changing contextual factors and technological capabilities. Frequent adjustments to both organizational strategy and IT strategy are required for an organization to compete successfully in the marketplace. This idea of co-evolution is taken even further, with some now proposing that the idea of strategic alignment between business and IT strategies be replaced by the idea of a "digital business strategy" where business and IT strategies are unified (Bharadwaj, El-Sawy, Pavlou, & Venkatraman, 2009).

Other criticisms include the idea that alignment may not always be desirable. Some caution against

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[1] The terms "fit," "linkage," "integration," "congruence," and "harmony" have been used as synonyms for alignment. Differences are slight; therefore, we adopt "alignment", the most commonly used term in IS. For a discussion of these other terms, see Chan and Reich (2007).

[2] While strategic alignment is the focus of this paper, a brief overview of the other types of alignment that have been studied can be found in Appendix A. We choose to focus on strategic alignment for several reasons. While the other types of alignment that are described in Appendix A are potentially fruitful areas for study, some of them, such as contextual alignment and business alignment, are unrelated to the IT function of the organization and fall more within the domain of traditional management research than of IS research. Of the three remaining types of alignment – strategic alignment, IT alignment, and structural alignment – strategic alignment is of greatest interest to practitioners (Luftman & Ben-Zvi, 2010). Finally, strategic alignment is more prominent in research and there is a greater need here for theoretical development and related work on measurement. For these reasons, we focus on strategic alignment. We do, however, believe that the logic of dynamic capabilities that we explain here can be applied to these other types of alignment. Similarly, we believe that the measure that we develop later in this paper could be adapted for these other types of alignment as well. We do not believe that our choice of strategic alignment biases our research in any noticeable way.

alignment that is "too tight," noting that tight alignment has the potential to restrict an organization's outlook, reduce its ability to recognize environmental changes, limit its strategic flexibility, and reduce its ability to respond to change (Cumps et al., 2009; Jarvenpaa & Ives, 1994). These limitations arise from path dependency. Path dependency theory states that present decisions are constrained by decisions made in the past (Leonard-Barton, 1992) and that institutions are self-reinforcing and find it difficult to break out of patterns of institutional behavior (Pierson, 2004). Thus, an organization with a high degree of alignment could continue to follow its established trajectory even when market conditions have changed and the strategies are no longer appropriate. Furthermore, some state that alignment is undesirable because in the present hypercompetitive business environment, serendipity and improvisation are more likely to yield competitive advantage than deliberative planning of the type that is generally prescribed when seeking strategic alignment (Ciborra, 1994; Orlikowski, 1996).

Finally, strategic alignment research has been criticized as being "atheoretic" (Chan & Reich, 2007, p. 311). Researchers have been challenged to provide a clear theoretical justification for their theoretical approach to the issue of alignment (Bergeron et al., 2001). Strategic management literature and contingency theory are the most common bases upon which strategic alignment studies are built, but these bases are not seen as providing rich, comprehensive theoretical explanations of the mechanisms and processes by which firms develop and sustain alignment (Chan & Reich, 2007). Well-established theories such as institutional theory and the resource-based view of the firm are seen as potentially providing robust theoretical explanations for strategic alignment research and have been suggested as foundations upon which to build (Chan & Reich, 2007). In sum, stronger theoretical support is needed for the concept of strategic alignment itself as well as to explain how it impacts organizational performance.

In spite of these criticisms, strategic alignment remains a major focus of research. Comprehensive literature reviews continue to be produced (e.g., Chan & Reich, 2007) and the positive impact of alignment on organizational performance continues to be noted (Avison, Jones, Powell, & Wilson, 2004; Celuch, Murphy, & Callaway, 2007; Schwarz, Kalika, Kefi, & Schwarz, 2010). Furthermore, in spite of discussion within the academy about the usefulness of the concept of strategic alignment, it remains one of the primary concerns of IT executives (Luftman & Ben-Zvi, 2010), a place it has held for over two decades. Instead of viewing the critiques listed above as reasons to abandon the study of strategic alignment, researchers have framed them as challenges to the attainment and explanation of alignment (Chan & Reich, 2007). In sum, in spite of the criticisms of strategic alignment research, and in spite of the controversies that appear within it, strategic alignment continues to be an important area of research. The topic is of keen interest to practitioners; there are divergent positions to be reconciled; and theoretical development will be beneficial.

We seek to address each of the aforementioned criticisms in this essay. We first turn to the topic of theoretical support for strategic alignment research, describing how existing research on strategic alignment can be viewed through the lens of the Dynamic Capabilities Framework and how that framework can serve as a basis for future work in the area of strategic alignment. One implication of this theoretical development is that alignment need not be mechanistic, but can instead be iterative, reciprocal, and ongoing. Another implication is that the processes by which we argue that alignment is achieved prevent the undesirable outcomes that some have described. We describe these implications in the balance of the paper.

2.2. The Dynamic Capabilities Framework

The Dynamic Capabilities Framework was developed partially in response to a limitation of the Resource-Based View (RBV) of the firm, namely that the RBV is a static theory of the firm (Teece et al., 1997; Wade & Hulland, 2004). The RBV explains that competing firms possess heterogeneous sets of resources and capabilities (Wernerfelt, 1984; Wernerfelt, 1995). Resources and capabilities that are valuable, rare, difficult to imitate, and difficult to substitute are a potential source of competitive advantage (Barney, 1991). The RBV defines resources quite broadly, including such items as physical capital (property, plant, and equipment; access to resources), human capital (experience, judgment, relationships of individual managers and workers), and organizational capital

(organizational structure, planning processes, controlling and coordinating systems) (Barney, 1991). Capabilities are defined as competencies that are built by combining resources (Grant, 1991). Within IS research, it has been explained that a firm's resources and capabilities include the ability "to conceive, implement, and exploit valuable IT applications" and, thus, IT may be a source of competitive advantage (Mata, Feurst, & Barney 1995, p. 491).

In alignment research, the RBV has been applied to explain that shared domain knowledge between business and IT managers helps produce strategic alignment, improve the quality of project planning, reduce problems with IT projects, and improve organizational performance (Kearns & Sabherwal, 2006-7). The RBV has also been used to explain how the strategy of a firm influences its productive interactions with other firms (Madhok, 2002). Finally, without explicitly appealing to the RBV, but clearly using similar reasoning, researchers have explained that the capabilities of an organization allow it to use information resources to build competitive advantage (Johnston & Carrico, 1988).

Nonetheless, the RBV is a static theory of the firm, and while it is well-suited to studies of stable environments, it is limited in its applicability to dynamic environments (Wade & Hulland, 2004). To address this limitation, the Dynamic Capabilities Framework has been proposed as an extension to the traditional, static interpretation of the RBV. The Dynamic Capabilities Framework builds on the view that an organization can be described as a set of interrelated operational and administrative routines that evolve based on performance feedback (Zollo & Winter, 2002). Dynamic capabilities are defined as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece et al., 1997, p. 516). The term "dynamic" indicates that organizations must continually monitor and renew functional competencies in response to the rapidly changing competitive context; and the term "capabilities" highlights the importance of management in developing and maintaining those functional competencies.

The Dynamic Capabilities Framework explains that internal technological, organizational, and managerial processes enable firms to generate economic rents in settings of rapid change (Teece et al., 1997). This framework emphasizes the importance of managerial capabilities rather than firm resources (as in the RBV). While resources can be acquired relatively quickly, capabilities must be built deliberately over time. Managerial capabilities are seen as being valuable, rare, difficult to imitate, and difficult to substitute because firms lack the organizational capacity to quickly develop new competencies (Dierickx & Cool, 1989).

Dynamic capabilities have been a subject of several specific IS research studies. IS researchers have described net-enabled innovation as a dynamic capability (Wheeler, 2002). Absorptive capacity has been described as a dynamic capability that is tied to a firm's knowledge management processes and IT resources (Zahra & George, 2002). Dynamic capabilities enable a firm to adjust its IT strategy and resources to maintain and sustain competitive advantage (Wade & Hulland, 2004). Without such enduring dynamic capabilities, competitive advantage could erode quickly. Thus, proven organizational capabilities, potentially including the capability of aligning IT strategy with business strategy, are valuable because competitive advantage can be built from them.

2.3. Strategic Alignment as a Dynamic Capability

With regard to strategic alignment, it has been stated that "to the extent that alignments result from skill rather than luck, it is reasonable to regard alignment skill as a strategic resource[3] capable of generating economic rents" (Powell, 1992, p. 119). Strategic alignment has been noted as one aspect of an overall strategic IT management capability (Peppard & Ward, 2004). Furthermore, it has been demonstrated that the ability to achieve strategic alignment is built upon a specific set of IT management competencies (Gupta, Karimi, & Somers, 1997). Thus, strategic alignment can be conceptualized as a management capability, one that fits the description of capabilities from the perspective of the Dynamic Capabilities Framework.

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[3] Dynamic Capabilities theorists prefer the term "capability" to the term "resource" that is used in this quote from Powell's (1992) study, but the implications are the same regardless of the terminology.

If the skill or ability to achieve strategic alignment can be understood as a managerial capability, it is important to examine whether this capability is temporary and static or if, instead, it is enduring and dynamic. The delivery of sustainable competitive advantage through IT is the goal of the IT function of the organization and is accomplished by developing a capability for strategic IT management (Peppard & Ward, 2004). Sustainability is defined as a state that exists after efforts to create that advantage have ended (Barney, 1991). Researchers in IS have demonstrated that management skills and capabilities are, indeed, sustainable over time (Dehning & Stratopoulos, 2003). Others have similarly noted that it is only managerial capabilities that are likely to be a sustainable source of competitive advantage (Mata et al., 1995). These skills are sustainable over time because the collective managerial knowledge of the firm becomes embedded in the organization's processes, procedures, and systems, as well as its modes of behavior, informal networks, and personal relationships (Collis, 1996; Eisenhardt & Martin, 2000). Strategic management of the IT function has been described as such an enduring capability, and alignment skill has been described as a subcomponent of this overall IT management capability (Peppard & Ward, 2004). Furthermore, alignment skill has been explicitly described elsewhere as tacit, firm-specific, complex, and sustainable (Powell, 1992). Skills and capabilities are, in sum, enduring and dynamic. They do not disappear immediately after their use and application; instead they continue to be a part of the organization's operational capabilities and routines.

On the basis of this foregoing research, we suggest that strategic alignment, particularly strategic alignment that is sustained over time, can be understood as a dynamic organizational capability upon which competitive advantage can be built. Following the terminology of the Dynamic Capabilities Framework, we term this competency the dynamic strategic alignment competency. In the next section, we explain how the Dynamic Capabilities Framework, as instantiated in the dynamic strategic alignment competency that we have described here, can be used to undergird research on strategic alignment that is sustained over time.

3. Conceptualizing the Dynamic Strategic Alignment Competency

The vast majority of research on strategic alignment has taken a static or cross-sectional approach, with relatively few studies examining dynamic or longitudinal alignment (Chan & Reich, 2007; Henderson & Venkatraman, 1992; Sabherwal et al., 2001). In spite of the dearth of research on dynamic alignment, several researchers have noted the potential usefulness of assessing how alignment is sustained over time (Agarwal & Sambamurthy, 2002; Chan & Reich, 2007; Miller, 1992; Sabherwal et al., 2001). Venkatraman, in his seminal article on the concept of alignment, noted that it is unclear whether the perspectives used to explore static alignment are applicable for dynamic alignment (Venkatraman, 1989). He further noted that appropriate ways to specify and test dynamic alignment were needed.

To develop our conceptualization of dynamic strategic alignment, we first explain the end-state perspective on alignment, a perspective that makes use of variance models to identify the factors that promote (or inhibit) alignment. This perspective is valuable because it allows researchers to measure the degree of strategic alignment at a firm at a given point in time (Venkatraman, 1989). The end-state perspective is described in the upcoming subsection and enables us to develop a static measure of strategic alignment as well as a measure of historical alignment. These measures are the first two elements of our unitary assessment of strategic alignment.

Then, after describing the end-state perspective on strategic alignment, we explain another perspective on alignment, the process perspective, which explains that IT strategy development and business strategy development must be integrated so that these two strategies can reciprocally impact one another (Agarwal & Sambamurthy, 2002). A particular strength of the process perspective is that it enables researchers to assess the maturity of the process by which the IT strategy and the business strategy are aligned (Luftman, 2000; Luftman & Kempaiah, 2007). We then present a measure of process maturity as the third and final element of our assessment of strategic alignment. We then synthesize these three elements from two perspectives to develop our single, unitary operationalization of dynamic strategic alignment.

3.1. The End-State Perspective on Strategic Alignment

Within the end-state perspective on strategic alignment, variance or factor models have been developed to explain how alignment can be achieved by manipulating a number of antecedents. The outcomes can then be observed and quantified (Brown & Magill, 1994; Preston & Karahanna, 2009; Reich & Benbasat, 2000). These studies generally adopt a contingency theory perspective, explaining that the degree of alignment is contingent on the identified factors. Studies that adopt this perspective on strategic alignment enable researchers to measure the degree of alignment between a firm's business strategy and IT strategy.

Within the end-state perspective, there are six different characterizations of alignment: moderation, mediation, matching, gestalts, profile deviation, and covariation (Venkatraman, 1989). Venkatraman's framework classifies these characterizations based on the number of variables in the equation, the degree of specificity of the functional form of alignment, and the presence or absence of a criterion variable (Bergeron, Raymond, & Rivard, 2004; Venkatraman, 1989). Here, we focus on the characterization of alignment as profile deviation, a common approach to the issue of strategic alignment in both IS research (Hirschheim & Sabherwal, 2001; Tallon, 2007-8) and management research (Drazin & Van de Ven, 1985; Miller, 1992).

In the profile deviation characterization of alignment, an ideal strategy profile is assumed to exist for a particular type of organization. Adherence to the profile results in higher performance; deviations from that profile result in lower performance. Adherence to the profile is measured and the degree of alignment is calculated. This alignment score can then be compared to the organization's performance. The degree of adherence to the ideal profile is measured by calculating the weighted Euclidian distance from the ideal profile (Bergeron et al., 2004; Venkatraman, 1989). To compute such a measure, the researcher develops an ideal strategic profile, adds weights to identify the relative importance of each dimension of strategy,[4] and uses a baseline model to assess the power of the test (Venkatraman, 1989). We calculate the degree of alignment using equation (1),

$$Misalignment_j = 1 + \sqrt{\sum_{i=1}^{n} \left\{ b_i \left(X_{ij} - I_{ij} \right)^2 \right\}} \tag{1}$$

where b_i represents the weight of strategy dimension i, X_{ij} represents the score for strategy dimension i for firm j, and I_{ij} represents the ideal score for strategy dimension i for firm j. Firms with a relatively low score on this measure are better aligned than are firms with relatively high scores.[5] This equation enables a researcher to quantify the degree of alignment for an organization at a given point in time and to evaluate it as high or low relative to other organizations. This equation is well-known (e.g., Venkatraman & Prescott 1990; Sabherwal & Chan 2001) and, while by itself it is a static measure, it constitutes the first element of our conceptualization of dynamic strategic alignment.

In addition to taking repeated measures of alignment in different time periods with equation (1), it is also feasible to develop a measure of alignment that incorporates historical measures of alignment. At this point, we now move beyond the static, single-time period, end-state model of strategic alignment to begin the description of our dynamic model of alignment. Specifically, we now develop a measure of an organization's history of alignment that incorporates repeated measures of alignment taken at multiple points in time.

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[4] Some researchers include differential weights for each dimension of strategy (Tallon, 2007-8; Venkatraman & Prescott, 1990). Other researchers assume equal importance for each dimension (Drazin & Van de Ven, 1985; Hirschheim & Sabherwal, 2001; Miller, 1992). Because the weighted approach is the more general approach, it is the one we have taken here.

[5] We follow Venkatraman in labeling this measure "misalignment" rather than "alignment." An organization that perfectly matches the ideal alignment profile would have a score of 1 on this measure. Because Equation (1) will be used later in this paper as part of a larger multiplicative model, we add a constant to avoid the possibility of an organization achieving a score of 0 on this measure. Adding a constant is a linear transformation and does not change the functional form of the model.

One indicator of an organization's dynamic strategic alignment competency is its historical track record of alignment. Frequent achievement of tight strategic alignment provides a measure of evidence that the alignment is due to an enduring competency rather than serendipity (Powell, 1992). Additionally, some have indicated that a virtuous cycle may operate in the area of strategic alignment. It has been shown that a firm's ability to achieve a high level of strategic alignment can be strengthened if alignment is sustained over time (Street, 2006). Based on this foregoing work, we argue that repeated measurements of high degrees of strategic alignment indicate an enduring, sustainable competency. Thus, in order to quantify an organization's dynamic strategic alignment competency, it is necessary to consider not only alignment in the present, as in equation (1) above, but also to examine the organization's demonstrated ability to achieve alignment in the past.

An assessment of an organization's dynamic strategic alignment competency also needs to include an investigation of how recently a firm has achieved alignment. We posit that a firm that had achieved a high degree of alignment at some point in the distant past, and had done so frequently in the distant past, did at that time likely possess a dynamic strategic alignment competency. If, however, this firm is no longer displaying a high degree of alignment, this constitutes evidence that the firm no longer possesses this competency. Conversely, if a firm presently displays a high degree of strategic alignment, and has displayed that level of alignment not only in the present, but also in the recent as well as the more distant past, this constitutes evidence that the firm currently possesses an enduring competency in the area of dynamic strategic alignment.

A historical measure of alignment would, therefore, include (1) the recency, Rj, with which a certain degree of alignment has been achieved by firm j and (2) the frequency, F_j, with which a certain degree of alignment has been achieved by firm j.[6] This measure of historical alignment is shown in equation (2) and quantifies the track record of the organization with regard to strategic alignment. Where equation (1) considers the present state of alignment, equation (2) considers it at previous points in time. As with equation (1), a low score on equation (2) is more desirable than a high score.

$$Historical\ Misalignment_j = \left\{ \frac{(R_j + 1)}{(F_j + 1)} \right\} \tag{2}$$

This historical measure of alignment shown in equation (2) provides one way to assess whether an organization is developing or has developed a dynamic strategic alignment competency. As we continue to investigate the extent of these competencies in an organization, we turn to a discussion of process perspective on strategic alignment.

3.2. The Process Perspective on Strategic Alignment

In addition to the factor perspective on strategic alignment, another perspective is to view strategic alignment as a process rather than as an end state (Baets, 1992; Chan & Reich, 2007; Henderson & Venkatraman, 1993; Powell, 1992). The argument behind this perspective is that strategic alignment cannot be definitively achieved when the business environment is continually changing, thus, giving rise to new information needs within the firm and necessitating changes in organizational strategy (Galliers, 2004). Instead of assessing the degree of alignment, the process perspective encourages researchers and practitioners to assess the interactions of the IT department with the business as a whole to see how interactions and linkages between the two facilitate the co-evolution of IT strategy and business strategy (Agarwal & Sambamurthy, 2002).

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[6] Variables will be measured in the following manner. R_j is measured in years and ranges from 1 to n, indicating that alignment was most recently achieved 1, 2..., or n years ago. For instance, when a firm has achieved an alignment score of 2 or less in the previous year, R_j is 1, meaning that the firm was last in a state of "alignment" very recently, only 1 year ago (the choice of "2" as indicating "alignment" is for illustrative purposes only – researchers are able to select other threshold levels). F_j is also measured in years; it ranges from 0 to n, indicating alignment in 0 out of n years, 1 out of n years, etc. When researchers examine alignment from the previous 5 years, and when the firm has been in a state of alignment (again defined as "having achieved an alignment score of 2 or less") in 5 out of the last 5 years, F_j is equal to 5. Note that constants are added to the variables R_{j_i} and F_{j_i} to avoid multiplying or dividing by 0. As we have previously noted, adding a constant is a linear transformation and does not change the functional form of the model. A complete numerical example where equations (1), (2), and the upcoming equation (3) are used is presented later in this section.

The idea of strategic alignment being sustained over time was first explored when the Capability Maturity Model was extended into IS research to develop the "Strategic Alignment Maturity Model" (SAMM) (Luftman, 2000). This process model explains that as organizations pursue the goal of strategic alignment, alignment moves from being (1) an initial or ad-hoc process, to (2) a committed process, to (3) an established focused process, to (4) an improved or managed process, and finally, to (5) an optimized process. When the strategic alignment process can be characterized as initial or ad-hoc, interaction between the IT and business strategists of the organization is minimal and it is unlikely that strategic alignment will result. In a committed process, the business has recognized the need to contemporaneously define IT and business strategies and has agreed to do so moving forward, but this process is in the early stages and alignment is still unlikely. An established, focused process is in place when IT is becoming an established part of business strategic planning. Alignment is a goal, but is likely not yet a reality. In an improved or managed strategic alignment process, IT is recognized as a value center, IT assets are used to develop and sustain competitive advantage, and IT capabilities may enable a business to take a new strategic direction. Finally, in an optimized process, IT is integral to the business's strategic plans, and IT strategic planning is fully integrated with business strategic planning. The greatest benefit to an organization is found when strategic alignment is an optimized process (Luftman, 2000). Thus, the SAMM model explores the "maturity" of strategic alignment and focuses not on the goal of alignment, but on the goal of developing processes that will enable ongoing alignment.

Other studies have explored the idea of alignment from the process perspective, each of which provides insight into strategic alignment but also has limitations. For instance, the "punctuated equilibrium" process model explains that firms may experience relatively long periods of minor, evolutionary strategic change, and relatively short periods of sweeping, revolutionary strategic change (Sabherwal et al., 2001). While the study offers an explanation of the uneven ways in which alignment evolves over time, it does not elucidate the causes of evolutionary or revolutionary change, nor does it seek to identify factors that may influence, enable, or promote alignment. Other researchers argue that a process where IT strategy and business strategy co-evolve is superior to the more static concept of alignment (Agarwal & Sambamurthy, 2002). Agarwal and Sambamurthy (2002) argue that frequent adjustments to both organizational strategy and IT strategy are required for an organization to compete successfully in the marketplace. Co-evolution as it is practiced in the business world is described in the study, but its measurement is not discussed. Because the article is targeted for practitioners, the concept is not described theoretically. Elsewhere, researchers have suggested that two specific processes contribute to strategic alignment: the CEO participating in IT planning, and the CIO participating business planning (Kearns & Lederer, 2003). While the identification of these two processes is helpful, a comprehensive, multifaceted process of strategic alignment is not described. Furthermore, multiple time periods are not considered in the study.

In this foregoing research, several specific steps and subprocesses have been suggested to foster movement toward alignment. These include evaluating the performance of senior executives in part by noting their innovative use of IT, allowing IT to provide innovative ideas that will shape the business, embedding IT in multiple departments and business processes, using IT to provide strategic flexibility to the business, giving the CIO visibility among the senior executives, and allowing IT executives to collaborate with business unit and regional managers to develop new capabilities (Agarwal & Sambamurthy, 2002). These suggestions are similar to those made elsewhere that shared domain knowledge and strategic business plans contribute to sustained strategic alignment (Chan et al., 2006; Reich & Benbasat, 2000). Furthermore, it has been suggested that gathering information about the competitive environment, considering new technological and strategic opportunities, and adjusting IT capabilities to maintain flexibility and competitive advantage are all beneficial (Grover & Segars, 2005; Peppard & Ward, 2004; Schwarz et al., 2010; Wade & Hulland, 2004). Each of these steps and subprocesses are suggested as ways to improve the maturity of strategic alignment.

We propose that the maturity of alignment be measured as it is measured in the work on the SAMM model, which incorporates many of the specific steps listed immediately above. IT alignment can be assessed in terms of communications maturity, value measurements maturity, governance maturity, partnership maturity, technology scope maturity, and skills maturity (Luftman, 2000).

Communications maturity is defined as an "effective exchange of ideas" between IT leaders and business leaders, and as "a clear understanding of what it takes to ensure successful strategies" (Luftman, 2000, p. 14). Value measurements maturity includes the IT metrics and service levels that the business understands and that demonstrate "the value of IT in terms of contribution to the business" (Luftman, 2000, p. 15). Governance maturity is defined as "ensuring that the appropriate business and IT participants formally discuss and review the priorities and allocation of IT resources" (Luftman, 2000, p. 17). Partnership maturity is observed when "IT both enables AND drives changes to both business processes and strategies" (Luftman, 2000, p. 18, emphasis in original). Technology scope and architecture maturity is observed when IT creates an infrastructure and applications that are useful for internal stakeholders, for customers and supply chain partners, and when IT evaluates and considers new technologies effectively. And finally, skills maturity results in a "non-political trusting environment between the business and IT, where risks are shared and innovation and entrepreneurship thrive" (Luftman, 2000, p. 20). These capabilities have been identified using slightly different terminology by other researchers as well (King & Teo, 1997; Street, 2006).

We propose that alignment maturity is a function of the six types of maturity described here. Assessing each of the types of maturity listed above would allow an organization to be identified as being at one of Luftman's five levels of alignment maturity. A very straightforward assessment of alignment maturity, *M*, of firm *j* is shown in equation 3.[7]

$$Alignment\ Maturity_j = \frac{1}{M_j} \tag{3}$$

At this juncture, a comment on path dependency theory is warranted. As we noted in the review of strategic alignment literature, path dependency theory states that present decisions are constrained by past decisions and patterns of institutional behavior (Leonard-Barton, 1992; Pierson, 2004). An argument could be presented based on path dependency theory that an organization with a strong history of alignment, which would be indicated by a low score on equation (2), might be limited in its prospects for future alignment. This is because business and IT strategies that are aligned and have served the firm well in the past could be retained and used by the firm even when market conditions have changed and the strategies are no longer appropriate. The organization, in spite of its history of strategic alignment, is locked in to its strategies, and this stagnation will prevent it from reaping the benefits of alignment.

Instead of subscribing to the argument built upon path dependency theory, we argue that a high degree of alignment combined with a high degree of historical alignment is indicative of a dynamic alignment competency, one that is built upon a mature planning process. This mature planning process can be measured using our equation (3). We argue that a mature alignment process, where interactions and linkages between the IT function and the organization as a whole facilitate the reciprocal development of strategy (Agarwal & Sambamurthy, 2002), and where environmental IT scanning and assessing alignment are part of the strategy development process (Street, 2006), enables the continual renewal of strategy and facilitates ongoing strategic alignment. Strategic options and organizational flexibility are not limited. Instead, the processes that facilitate strategic alignment enable it to be maintained in the face of changes in the competitive environment.

Findings from strategic information systems planning (SISP) research provide a complementary explanation regarding how path dependency can be overcome. SISP research explains that one of the outcomes of a mature strategic IS planning process is strategic alignment (Grover & Segars, 2005; Segars & Grover, 1999). Furthermore, SISP researchers have noted that strategic planning is

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[7] The measure of alignment maturity works in the following manner. If, for instance, M_j indicates that firm *j* has an "optimized process" for strategic alignment, and thus, is at the highest possible level of maturity, 5, the alignment maturity measure in equation (3) will equal 1/5. In contrast, if M_j indicates that firm *j* has an ad-hoc or initial process, firm *j* is at the lowest possible level of maturity, 1, and the alignment maturity level calculated in equation (3) will be 1/1 = 1. Thus, a high value for M_j yields a lower value on this measure. As was the case with equations (1) and (2), a lower score on this alignment maturity measure is more desirable.

a process and that, as planning processes develop and evolve, they become more effective (Grover & Segars, 2005). Rather than environmental uncertainty and rapid changes in IT capabilities overwhelming organizations and preventing them from responding appropriately, environmental uncertainty and change stimulate planning (Grover & Segars, 2005). Comprehensive information is gathered and a wide set of alternatives are considered. We argue that this dynamic, where uncertainty and change stimulate planning, mitigates the potential constraining effects of path dependency. When the environment changes, organizations are compelled to take action and make commensurate changes in response. Thus, we conclude that when strategic alignment is built on a mature process for strategic planning, it can be sustained in a manner that contrasts with the predictions of path dependency.

3.3. Linking the End-State and Process Perspectives on Strategic Alignment

Building on the arguments that we have presented in the previous section, we suggest that alignment should be understood as both an end state and a process. Indeed, researchers have observed that there is particular benefit to be gained from linking these two perspectives (Chan & Reich, 2007). Furthermore, mature strategic planning processes lead to a state of strategic alignment (Grover & Segars, 2005; Segars & Grover, 1999), indicating that the end-state and process perspectives can be linked.

One limitation that exists when using the end-state perspective alone to assess strategic alignment is that it does not indicate how alignment can be sustained over time within a firm. For instance, it may be the case that IT strategy and business strategy at Organization A have been aligned, but with IT in a "lagging" role, where IT must conform itself to the business strategy after the business strategy has been defined. This scenario has been referred to as sequential strategic integration and has been identified as suboptimal (Teo & King, 1996, 1999). This type of sequential integration mitigates against sustained alignment and the co-evolution of strategy (Agarwal & Sambamurthy, 2002). In another instance, Organization B could have achieved a high degree of alignment, but done so serendipitously, not in a way that can be duplicated in future time periods to ensure that alignment endures. Strategic alignment that happens in this fashion indicates little significant effort has been invested and, therefore, that there is no "alignment skill" or competency present in the organization. Without this competency, it will be difficult for the organization to sustain alignment. In these instances, Organizations A and B should be contrasted with Organization C, in which a high degree of alignment has been achieved through a mature strategic planning process enabling the co-evolution of IT and business strategies. Such alignment has been referred to as "full integration," and the performance benefits of this type of alignment have been repeatedly identified (Teo & King, 1996, 1999). A single measure of the degree of alignment does not distinguish between these three types of organizations and is limited by not assessing the process, which would show their distinctions.

The process view, however, is not without its own limitations. If Organization D has a mature process for achieving alignment, then Organization D will most likely show a high degree of alignment. Nevertheless, an organization's propensity for alignment does not guarantee that it will always be aligned. The possibility remains that Organization D, with its mature alignment process, may have a breakdown in a crucial subprocess that ultimately prevents alignment. This can occur when business and IT strategies are "reciprocally integrated." If the strategies are reciprocally integrated, then a process for achieving alignment exists, but because the IT and business strategies are independent statements, their degree of alignment is always at risk. "Reciprocal integration" has been shown to yield performance benefits (Teo & King, 1996, 1999), but these benefits are not the same degree of benefits observed in the case of full integration, which has been described above. Alignment maturity must be measured to validate the efficacy of the alignment process. Thus, relying exclusively on process measurements of alignment maturity is also a limited approach because it fails to capture current states of alignment.

There is benefit to be gained from examining the degree of alignment, the historical alignment of the organization, and the maturity of the strategic alignment process. Each of these three measures can be examined individually, and they can also be combined to yield a single measure for gauging an

organization's dynamic strategic alignment competency. We propose a measurement of the dynamic strategic alignment competency, shown in equation (4), which is the product of the three equations presented earlier. Firms that have a high degree of alignment, those that have had a high degree of historical alignment, and those that have a mature process for alignment will achieve low values on this measure of alignment competency. A low score on this measure provides evidence that a firm has developed a competency in the area of dynamic strategic alignment. This operationalization represents a unitary quantification of a firm's alignment competency.

$$\text{\textit{Dynamic Strategic Alignment Competency}} = \left\{1 + \sqrt{\sum_{i=1}^{n}\left\{b_i(X_{ij} - I_{ij})^2\right\}}\right\} \times \left\{\frac{(R_j + 1)}{(F_j + 1)}\right\} \times \left\{\frac{1}{M_j}\right\} \quad (4)$$

We now turn to the implications of our dynamic strategic alignment competency and its measure. We first provide theoretical implications for researchers, followed by practical implications and a demonstration of how our measurement could be used by executives and managers at an organization.

4. Discussion

In this paper, we have conceptualized the dynamic strategic alignment competency and demonstrated the use of our approach. We now describe the implications of our research, as well as opportunities for future research.

4.1. Theoretical Implications

In spite of the fact that strategic alignment is a topic of long-standing importance, a robust theoretical base has yet to materialize either for or from strategic alignment research (Chan & Reich, 2007). As we have noted, our paper is an endeavor to address this stated need.

The Dynamic Capabilities Framework reflects the emerging understanding that strategic alignment research is presently moving away from static explanations of alignment toward dynamic explanations (Luftman & Brier, 1999; Miles & Snow, 1994; Sabherwal & Chan, 2001). The Dynamic Capabilities Framework complements rather than contradicts extant work, and can shed additional light on the conclusions of prior research. For instance, it has been argued that when IT and business strategies co-evolve, organizational ambidexterity and agility result (Agarwal & Sambamurthy, 2002; Sambamurthy, 2000). Co-evolution and the processes that enable it can, thus, be understood as competencies that enable organizations to address rapidly changing environments. Furthermore, the notion that there is an "alignment behavior" that can be developed and cultivated to facilitate sustained strategic alignment over time (Luftman, 2000, p. 24) also points to an organizational practice or routine that can be understood as a dynamic capability. Similarly, one of the outcomes of a mature strategic planning process is strategic alignment (Grover & Segars, 2005; Segars & Grover, 1999). Thus, the first theoretical contribution of our research is that we have identified how the Dynamic Capabilities Framework can serve as a foundation for strategic alignment research. Foregoing research can be understood in light of this theoretical perspective, and future work can be conducted using this theoretical lens as well.

In the course of constructing our arguments, we bring together the two dominant perspectives on strategic alignment – strategic alignment as an end state and strategic alignment as a process. Our study, thereby, paves the way for IS researchers to continue to investigate strategic alignment issues from a longitudinal and dynamic viewpoint. Moreover, our study provides a theoretical foundation that allows a more holistic and comprehensive view of alignment to be developed. Alignment itself – as well as its development, maintenance, and deterioration – can be studied from our theoretical viewpoint in a host of contexts and using a broad spectrum of methodologies.

The understanding that strategic alignment is a dynamic capability could stimulate new findings, perhaps influencing the direction of strategic alignment thought. This could happen as researchers identify how firms with particular strategic orientations have specific alignment-related processes. It

could also happen as researchers explore ways that different industries and firms of different sizes institutionalize the processes that facilitate the development and maintenance of alignment. Furthermore, our arguments could harmonize with research on digital business strategy (Bharadwaj et al., 2009), by providing a way to ascertain how close a firm is to having a single, unified strategy statement rather than separate business and IT strategies. Thus, our discussion of how the Dynamic Capabilities Framework can be utilized in strategic alignment research has the potential to strengthen research in this area.

We also contribute to the development of the Dynamic Capabilities Framework itself. One of the strategic problems that firms face is the need to identify which competencies are valuable and will enhance their position in the marketplace (Teece et al., 1997). While others have described the processes by which alignment can be achieved (Grover & Segars, 2005; Luftman, 2000; Segars & Grover, 1999), we have explicitly defined these processes as part of a larger dynamic capability for strategic alignment. While technology itself may not be a source of competitive advantage because of its ubiquity (Carr, 2003), the ability of an organization to foster alignment between IT strategy and business strategy is an enduring competency that is a source of competitive advantage. This ability to foster alignment is valuable and rare, and is neither easily imitated nor substituted. Thus, we have identified that the dynamic strategic alignment competency is a dynamic capability and a potential source of competitive advantage.

Furthermore, while the Dynamic Capabilities Framework literature states that path dependency limits firms' choices of investments, routines, and behaviors (Teece et al., 1997), we modify this explanation to note that the dynamic strategic alignment competency mitigates the constraining effect of path dependency. The competency that we have described in this paper allows a firm to be agile and to respond to the rapidly changing environment. The firm can use this dynamic competency to continue to evolve and respond to the shifting competitive landscape. In this way, this competency is different from other competencies that a firm may retain, nurture, and protect even after they have lost their competitive value. While some competencies have the potential to develop into "rigidities" (Chen, Mocker, Preston, & Teubner, 2010; Leonard-Barton, 1992), we believe that the very nature of the dynamic strategic alignment competency protects against this possibility.

In IS research, some suggest that serendipity and improvisation are more likely to yield competitive advantage than deliberative planning of the type that is generally prescribed when seeking strategic alignment (Ciborra, 1994; Orlikowski, 1996). Such arguments, however, stand in contrast to a consistent stream of research that explains the formation of IT strategy as a product of both top-down and bottom-up planning. Both rational, top-down planning and adaptation that incorporates bottom-up feedback contribute to the development of successful IT strategy (Segars & Grover, 1999). Our paper, therefore, speaks to the debate that pits improvisation, serendipity, and bottom-up feedback against planning and top-down control.

More broadly, we hope that our paper stimulates others to develop dynamic, process-oriented explanations of phenomena. Causal theories should have a temporal element (Gregor, 2006), and we argue that this element should be made explicit in theoretical development. There is considerable value in detailed discussion of the actions, activities, and processes by which various phenomena occur. Researchers should strive for such explanations, even when they touch on multiple levels of analysis, as ours does on the firm level as well as the business process level.

4.2. Methodological and Practical Implications

For the benefit of practitioners, we have provided an explanation of why developing a dynamic capability for strategic alignment is beneficial to their organizations. It has been previously noted that dynamic capabilities, in general, enable a firm to adjust its IT strategy and resources to maintain competitive advantage (Wade & Hulland, 2004). The dynamic strategic alignment competency is one such capability. This capability is valuable because strategic alignment provides strategic flexibility to firms. Strategic flexibility has both proactive and reactive forms, each of which enable improved organizational performance (Celuch et al., 2007). When alignment is achieved and sustained through

an iterative, mature process that enables business and IT strategies to co-evolve (Agarwal & Sambamurthy, 2002; Luftman, 2000), the organization can lead its competitors through superior IT strategies and can also be aware of the changing competitive environment and respond to it in an appropriate manner.

Additionally, we have provided a measure of the dynamic strategic alignment competency. This operationalization can be used as a unitary measure to gain a comprehensive overview of how well an organization aligns its business and IT strategies. The operationalization can also be used by splitting it into its three components to identify where a firm performs well and where it performs poorly. Is strategic alignment a strength (or a problem) now? Has it been a strength (or a problem) in the past? Are well-developed processes in place to create and maintain alignment? Executives can use this measure to take a snapshot of how well their firms are integrating business and IT strategies.

Table 1 presents a numerical example of how our operationalization might be applied within an organization that is seeking to assess its strategic alignment – and its dynamic competency for strategic alignment. Note that in this scheme, a lower score means that the organization has a greater alignment competency. Using this assessment, a practitioner can use equation (1) to see that the organization O that is considered here is highly aligned at the present time, with a value of 1.1949 being very close to the ideal alignment value of 1.00. The state of high strategic alignment has not always existed within this organization, however. The historical alignment score of 1 from equation (2) indicates that the firm has not been aligned very frequently in the past. Finally, the alignment maturity measurement of 0.25 from equation (3) indicates that the organization has an "improved, managed process" to support strategic alignment, a state that is nearing, but has not yet reached, the ideal. An overall assessment of the organization's strategic alignment competency using equation (4) indicates that the firm has earned a value of 0.2987.

The interpretation of these scores is that the organization is currently in a state of high strategic alignment. Because this state has not always existed, and because it is apparent that a maturing process underlies alignment, it appears that this organization is in the process of developing or has recently developed a dynamic strategic alignment competency. Future measurements will be needed to verify that this competency does indeed exist, but the presence of high strategic alignment at present and a mature process to support alignment are positive indicators.

In the example presented here, each of the three components of the dynamic strategic alignment competency calculated with equation (4) is equally weighted. It is, however, conceivable to assign differing weights to the three components. For instance, when a firm or group of firms is being studied that has recently passed through a "revolutionary" period in the history of the industry, it is reasonable to assign a relatively low weight to the historical alignment component. At such a point, the other two components--the current state of alignment and the alignment maturity component that measures the processes that enable alignment going forward--are of greatest importance. Another instance where different weights for the three components could be used would be a study of recent startups. In such firms, the maturity of the alignment processes would be of greatest importance. History is unavailable and the current state of alignment may be subject to fluctuation as the firm becomes more established. In sum, we note that researchers and practitioners should consider the unique circumstances of the firms they are examining when measuring a firm's dynamic strategic alignment competency.

Table 1. Numerical Example of the Dynamic Strategic Alignment Competency Calculation

Misalignment - Analysis reveals that hypothetical organization *O* has a misalignment value of 1.1949 at the present time, as calculated by equation (1) (as shown below).

Strategy Dimension	Ideal Score (I)	Measured Score (X)	Difference	Squared Difference	Weight (b)	Alignment Score
i_1	0	-0.2	0.2	0.04	0.2	0.008
i_2	1	0.9	0.1	0.01	0.2	0.002
i_3	-1	-0.7	0.3	0.09	0.2	0.018
i_4	0	0.1	0.1	0.01	0.2	0.002
i_5	1	0.8	0.2	0.04	0.2	0.008
				0.19		0.038

$$\sqrt{0.038} = 0.1949$$

$$Misalignment_j = 1 + \sqrt{\sum_{i=1}^{n}\left\{b_i\left(X_{ij} - I_{ij}\right)^2\right\}} = \qquad \mathbf{1.1949}$$

Historical Misalignment - Assuming that data for 5 previous years is available (*t-1*, *t-2*, *t-3*, *t-4*, and *t-5*), *O* has a historical misalignment value of 1, as calculated using equation (2), as shown below.

Recency (R_j)	1 (i.e., the firm was "aligned," defined as "having an alignment score on equation (1) of 2 or less," last year at *t-1*)
Frequency (F_j)	1 (i.e., the firm was "aligned," again defined as "having an alignment score on equation (1) of 2 or less," 1 out of the last 5 years – either at *t-1*, *t-2*, *t-3*, *t-4*, or *t-5*)

$$Historical\ Misalignment_j = \left\{\frac{(R_j + 1)}{(F_j + 1)}\right\} = \qquad \mathbf{1}$$

Alignment Maturity - Finally, *O* has a measured maturity rating of ¼, or 0.25, as calculated using equation (3), at time *t* as shown below.

Maturity (M_{jt})	4 (i.e., the firm has an "improved, managed process" as defined and measured using the instrument of Luftman 2000)

$$Alignment\ Maturity_j = \frac{1}{M_j} = \qquad \mathbf{0.25}$$

Dynamic Strategic Alignment Competency - Multiplying these scores together as shown in equation (4) yields an overall Dynamic Strategic Alignment Competency score for *O* at time *t* of 0.2987. In this scheme, lower alignment scores provide evidence that an organization has a competency in the area of dynamic strategic alignment. Higher scores indicate the opposite.

Dynamic Strategic Alignment Competency	$= \left\{1 + \sqrt{\sum_{i=1}^{n}\left\{b_i\left(X_{ij} - I_{ij}\right)^2\right\}}\right\} \times \left\{\frac{(R_j + 1)}{(F_j + 1)}\right\} \times \left\{\frac{1}{M_j}\right\} =$	**0.2987**

4.3. Future Research

To continue work on the study of dynamic strategic alignment, and to further test our assertions, we suggest the following research agenda. An initial step will be to validate our measurement model with field data. We intend to collect data using the survey items of Sabherwal and Chan (2001) and Luftman (2000). This survey instrument will be used to assess alignment, historical alignment, and alignment maturity. Archival data could be used to perform supplemental tests of our operationalization. While a number of studies have been conducted using survey data to calculate strategic alignment (Chan, Huff, Barclay, & Copeland, 1997; Hirschheim & Sabherwal, 2001; Kearns & Sabherwal, 2006-7; Palmer & Markus, 2000), the use of archival measures of financial performance and business process efficiency to study strategic alignment has only rarely been undertaken (Sabherwal & Kirs, 1994). Two particular advantages of this approach are, first, the ability to examine historical data and assess how alignment is sustained over time, and second, the ability to develop profiles of aligned organizations.

Perhaps more significantly, the logic of dynamic strategic alignment competency could be extended to multi-firm organizations. Most current explorations of strategy look at the firm level. Cross-organization alliances and communities of organizations are a growing reality in modern business (Applegate, 2006). Fruitful research remains to be done that examines both vertical alliances (supply chains) and horizontal alliances and "ecosystems" of firms within an industry (Bharadwaj et al., 2009). While some have investigated the "fit" between information processing needs and information processing capabilities (Bensaou & Venkatraman, 1995; Premkumar, Ramamurthy, & Saunders, 2005), research remains to be done on the process of developing strategic alignment across firm boundaries.

Another research topic arises from the tension that exists among the explanations of sustained strategic alignment (Luftman, 2000), the co-evolution of strategy (Agarwal & Sambamurthy, 2002), and the idea of strategic alignment as a process that can be described by a punctuated equilibrium model (Sabherwal et al., 2001). The punctuated equilibrium model assumes that there are long periods of stability in industries, a situation that can lead to institutional inertia and a lack of alignment. While some qualitative evidence has been presented to support this assumption, it is, nevertheless, an assertion that is not entirely in agreement with explanations of hypercompetitive environments and continual dynamism in many industries (Agarwal & Sambamurthy, 2002; Luftman, 2000; Sambamurthy, 2000). Studies can be conducted to examine how the dynamic strategic alignment competency does or does not mitigate path dependency. Core competencies have, at times, become core rigidities at firms (Chen et al., 2010; Leonard-Barton, 1992). This has been particularly true when an industry goes through a long period of stability. A successful state that served well during a period of stability can cease to be valuable when the stability ends and competitive conditions change. Memories of success built on that state can continue to provide justification for maintaining it. This is one aspect of path dependency. Can a dynamic strategic alignment competency keep firms from becoming locked in to past ways of success, or does alignment at a single point in time mean that a firm will attempt to replicate that alignment in ways that are ill-suited to the new competitive landscape? An examination of industry dynamics, institutional inertia, path dependency, and strategic alignment would provide a way to bring clarity to these issues.

While foregoing research has highlighted the benefits of strategic alignment, work remains to be done that will reveal boundaries of applicability. For instance, it has already been observed that alignment does not necessarily lead to improved performance in organizations that take on Miles and Snow's (1978) defender orientation (Sabherwal & Chan, 2001). Other research may reveal that the logic of alignment may be more or less applicable in various industries and organizational types.

Finally, a process theory of IT governance and strategic alignment can be developed. It has long been recognized that top-down planning often conflicts with bottom-up processes, even though both are clearly necessary (Hackathorn & Karimi, 1988). Iterative, reciprocal, feedback-oriented strategic formulation is desirable (van der Zee & de Jong, 1999). A theory that includes how IT governance and strategic planning, often top-down processes, confront and coexist with bottom-up processes such as bricolage and drift (Ciborra, 2000), would provide insights into the reality of developing and sustaining alignment in a dynamic real-world setting.

One caveat that must be made is that strategic alignment does not guarantee improved organizational performance. Strategic alignment means that a company effectively plans IT in support of its business strategy. Organizations must ensure that they have aligned strategies, but they must also deploy resources appropriately in order to execute their strategies. Other types of alignment, including IT alignment, business alignment, and structural alignment, should be pursued as well (see Appendix A). Future research that examines each of these types of alignment will provide value to researchers and practitioners as well. A similar caveat is that there are many ways for organizations to improve performance and achieve competitive advantage; pursuing and maintaining strategic alignment is one tool among many.

5. Conclusion

Strategic alignment in a dynamic environment is important, but, to date, explicit conceptualization and operationalization of the construct has been largely neglected. In this essay, we have provided a theoretically-motivated explanation of the dynamic strategic alignment competency and demonstrated the use of our approach. We believe that the explication of this competency will provide new impetus for organizations to develop processes that aid in strategic alignment and quantify their effectiveness. We also believe that our work provides fertile ground for continuing research into sustained strategic alignment and that such research will provide insights and guidance for managers.

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Appendix

Appendix A. Five Types of Alignment

Among the first descriptions of alignment in literature is the idea of aligning business resources with business strategy. This type of alignment has been referred to as business alignment (Sabherwal et al., 2001) and was built upon the idea that a business's structure and resources should evolve to support the strategic mission of the business (Andrews, 1971; Chandler, 1962). Chandler argued that businesses should have a long-term coordinated strategy rather than allowing the individual functions within the firm to operate independently. He defined strategy as the creation of long-term goals, the selection of courses of action that would enable the achievement of the goals, and the subsequent allocation and deployment of resources to achieve the goals. He succinctly summarized his arguments as "structure follows strategy." Similarly, Andrews's (1971) concept of strategy is described in terms of the strength or weakness of the resource position of the firm (Wernerfelt, 1984). When business alignment occurs, the business is well-positioned to execute its strategy and performance benefits will accrue (Andrews, 1971; Chandler, 1962). Researchers have examined this type of alignment in strategic management research as well as in IS research (Das, Zahra, & Warkentiin 1991; Marvell & Moody, 1996; Miles & Snow, 1978; Sabherwal et al., 2001; Shortell & Zajac, 1990).

As IS research began to become more widely accepted within the business disciplines, the logic of business alignment was applied within the IT department to describe a second type of alignment. If alignment between business resources and business strategy yielded performance benefits, researchers conjectured that alignment between IT resources and IT strategy should also yield benefits. This type of alignment is referred to as IT alignment (Sabherwal et al., 2001). Again, the logic behind this type of alignment is that when IT strategy is formulated and then IT resource deployment is guided by that IT strategy, the organization is well-positioned to execute its IT strategy. The successful execution of an appropriate IT strategy enables the organization to achieve its goals. Empirical research on IT alignment has also identified performance gains (Brown & Magill, 1994; Camillus & Lederer, 1985; Keen, 1991).

The third type of alignment that has been studied is known as environmental alignment or contextual alignment (Miller, 1992). Businesses should strive to align their strategy with the competitive context in which they exist (Drazin & Van de Ven, 1985). The competitive context includes the industry context, the macroeconomic context, and other national and cultural factors (Baets, 1992; Chan & Reich, 2007; Scott Morton, 1991). This type of alignment has its roots in the Industrial Organization paradigm that explains that businesses develop strategy in response to the structure of the industry in which they compete (Bain, 1968; Mason, 1939; Porter, 1979). Researchers have explored contextual alignment for decades and continue to discuss its impact on organizational performance (Pavlou & El Sawy, 2007; Venkatraman & Prescott, 1990). When strategy is appropriate for the given context; that is, when the strategy is aligned with the context, performance gains can be achieved.

Structural alignment, a fourth type of alignment, describes the congruence between business resources and IT resources (Sabherwal et al., 2001). As with the other types of alignment, structural alignment has been investigated both in strategic management as well as in IS, and performance benefits have been observed (Brown, 1997; Ein-Dor & Segev, 1982; Henderson & Venkatraman, 1993; Jelinek & Schoonhoven, 1990).

A fifth type of alignment, and the primary focus of this paper, is known as strategic alignment. Strategic Alignment examines the link between IT strategy and business strategy (Sabherwal et al., 2001) and is described as "…the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans" (Reich & Benbasat, 2000, p. 82). Others provide similar descriptions for strategic alignment, including "applying IT in an appropriate and timely way and in harmony with business strategies" (Luftman & Brier, 1999, p. 109), and as "using IT in a way consistent with the firm's overall strategy." (Palmer & Markus, 2000, p. 242). Much of the work on alignment in IS has examined this type of alignment, and research on strategic alignment remains a major focus of IS researchers

(Agarwal & Sambamurthy, 2009; Boynton & Zmud, 1987; Hirschheim & Sabherwal, 2001; Oh and Pinsonneault, 2007; Pyburn, 1983; Reich & Benbasat, 1996; Reich & Benbasat, 2000).

Figure A.1 shows that business alignment, IT alignment, strategic alignment, and structural alignment are all developed within the boundary of the firm. The remaining type of alignment, contextual alignment, necessitates interaction with forces outside the boundary of the firm. The degree of each of these five types of alignment, as well as the business strategy, the business resources, the IT strategy and the IT resources, then impact the organization's performance. This model represents a synthesis of several similar widely-applied and tested models in alignment research (Baets, 1992; Henderson & Venkatraman, 1993; MacDonald, 1991; Sabherwal et al., 2001). Strategic alignment between IT strategy and business strategy is the primary focus of IS researchers.
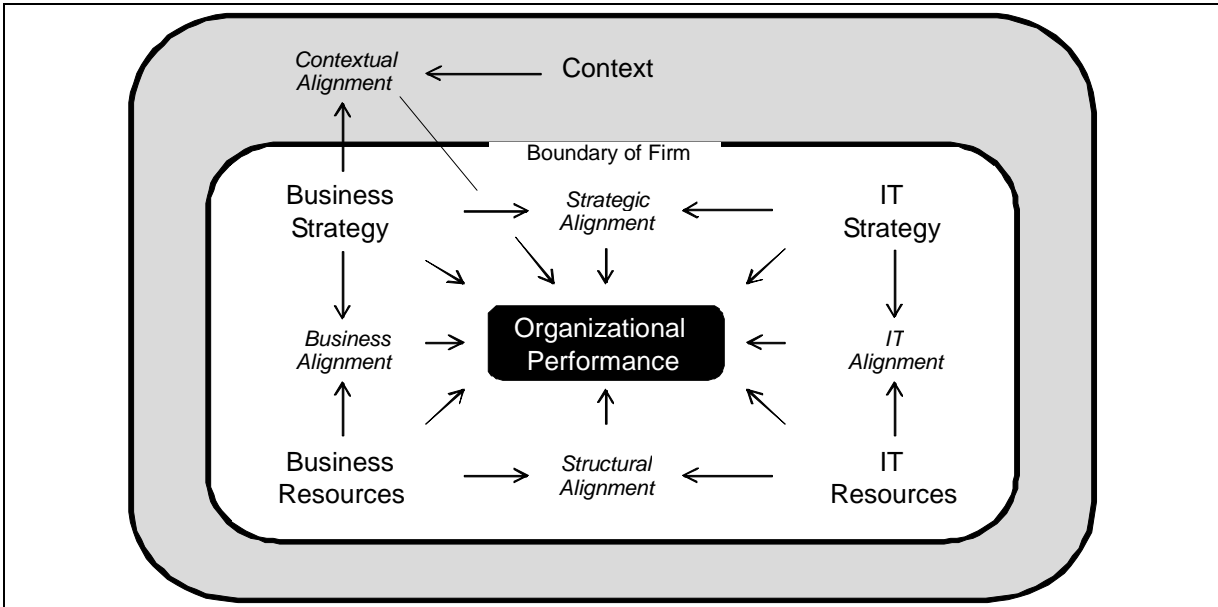
Figure A.1. Five Types of Alignment

About the Authors

Jeff BAKER presently works as an Assistant Professor of Management Information Systems at the American University of Sharjah. He is also a Research Associate at the Institute for Internet Buyer Behavior at Texas Tech University. His primary research interest is IT investment and strategy, with an emphasis on IT business value, strategic alignment, and strategies in electronic commerce. His research has appeared or is forthcoming in the *Journal of the AIS*, *Communications of the AIS*, the *International Journal of Production Research*, and the proceedings of the *International Conference on Information Systems*.

Donald R. JONES is the James C. Wetherbe Professor of MIS in the Rawls College of Business at Texas Tech University. His research interests include the effects of DSS features on decision making, use of database queries in problem solving, human behavior in online environments, and IT business value. His research has appeared in *Organizational Behavior and Human Decision Processes*, the *Journal of the AIS, Decision Support Systems*, *Information and Management*, the *DATABASE for Advances in Information Systems,* the *Journal of Information Systems*, *Communications of the AIS*, and the *International Journal of Accounting Information Systems*, among others.

Qing CAO is the Jerry Rawls Professor of Management Information Systems in the Rawls College of Business at Texas Tech University. His research interests include IT governance, IT diffusion and adoption, supply chain information management, strategic alignment, and artificial intelligence applications. His research has appeared in top business journals such as the *Journal of Operations Management*, *Decision Sciences*, *Communications of the ACM*, *Decision Support Systems*, *IEEE Transactions on Systems, Man, and Cybernetics*, *Information and Management*, the *International Journal of Production Research*, the *European Journal of Operational Research*, *Computers and Operations Research*, *Annals of Operations Research*, *Journal of Production and Innovation Management*, *International Journal of Project Management*, *Journal of Database Management*, the *International Journal of Production Economics*, and others.

Jaeki SONG is the Jerry S. Rawls Professor of MIS at the Rawls College of Business at Texas Tech University. His primary areas of research are the adoption of Web-based technologies and Service Innovation. Specific research issues include technology continuance, trust, decision support systems, and social aspects of adoption. He also conducts research on the value co-creation in service innovation and on business intelligence. His research has appeared in *Management Science, Journal of Management Information Systems, IEEE Transactions on Professional Communication, Decision Support Systems, Information and Management, Communications of the AIS, International Journal of Information Management, Information Systems Frontier, Electronic Commerce Research, Journal of Internet Commerce, International Journal of E-Business Research*, *Journal of Electronic Commerce in Organizations*, and other journals.