The Roots of Misalignment: Insights from a System Dynamics Perspective

Jeff Baker
Associate Professor
School of Business and Management
American University of Sharjah
PO Box 26666
Sharjah, United Arab Emirates
jbaker@aus.edu
+971 06 515 2605

Harminder Singh
Senior Lecturer
Business Information Systems
Auckland University of Technology
Private Bag 92006
Auckland 1142
New Zealand
harminder.singh@aut.ac.nz
+64 9 921 9999, ext: 5029

Abstract

Aligning IT strategy with business strategy has repeatedly been shown to yield organizational performance benefits, and is consistently among executives' most important goals. However, as organizations pursue strategic alignment, IT and business strategies often evolve in unintended ways, thereby limiting alignment. In this essay, we review literature to identify reasons why IT and business strategies are often not realized in the manner in which they were originally intended, resulting in misalignment. To model the processes of strategy formation and strategic change, including processes at multiple levels within the organization, we utilize the causal loop diagramming approach of systems dynamics. Our model explains that key reasons for the differences between intended and realized strategies include the limitations of senior managers' communication, the ability of individuals and groups within organizational hierarchies to modify plans developed by senior management, and the reality of environmental dynamism. The primary intended contribution of this paper is the enumeration and modeling of both the top-down processes that can promote or hinder strategic alignment, as well as the less-studied bottom-up processes, ultimately yielding a more nuanced, dynamic, process-oriented understanding of strategic alignment.

Keywords: strategic alignment, strategy, strategic IS planning, drift, governance, process theory, systems dynamics, causal loop, feedback

1. Introduction

The alignment of an organization's business strategy with its IT strategy is a research topic of enduring importance. Strategic alignment has been and continues to be of keen interest to practitioners, a fact to which decades of industry surveys attest (Kappelman et al. 2014; Niederman et al. 1991). This practitioner interest, in turn, has motivated researchers to publish an extensive body of work, identifying a host of antecedents and consequences, costs and benefits, processes and procedures related to alignment (Chan et al. 2007b). This research amply documents the organizational performance benefits of strategic alignment (Chan et al. 2006; Gerow et al. 2014b; Reich et al. 1996; Sabherwal et al. 2001a). Interest in the topic remains strong, with workshops, special issues of journals, literature reviews, meta-analyses, and numerous research projects both completed and planned (Bharadwaj et al. 2013; Chan et al. 2007a; Coltman et al. 2015; Gerow et al. 2014a; Gerow et al. 2014b; Karpovsky et al. 2015).

Our goal in this essay is to advance the study of strategic alignment by explaining how and why misalignment can occur. Alignment is often viewed as the result of top-down managerial planning and control processes. We propose an alternative framing for strategic alignment, one that focuses not only on the top-down processes of managerial planning and communication, but also on the bottom-up processes initiated by users and managers. These less-frequently examined bottom-up processes are important because they may lead to unintended deviations in an organization's business and IT strategies. While executives may develop plans to promote strategic alignment, managers and users' actions influence the way these plans are implemented. Strategic drift from the original objectives (Ciborra 2000) takes place because users and managers have agency and may choose to improvise to deal with various challenges (Singh 2015), such as turbulent environments, ambiguous directives, resource shortages, political machinations, and IT

systems that do not possess the desired functionality. While strategic alignment may have resulted if executives' plans had been implemented exactly as stated, the challenges of communication, the realities of user agency, and the dynamic business environment may lead to misalignment, with business and IT strategies enacted in such a way that the two do not support one another.

Our essay proceeds as follows. We begin by reviewing selected literature on strategic alignment, noting the limitations that arise from the prevalence of factor models rather than process models, from firm-level study rather than process-, unit-, or subgroup-level study, and from an emphasis on top-down rather than bottom-up activities in strategy enactment. In our Theoretical Development section, we seek to address these limitations in the literature by building a model that identifies reasons for deviation from intended strategies, and ultimately for misalignment. We take a system dynamics perspective (Forrester 1961; Richardson 2012) on strategy formation and implementation in order to identify key processes at multiple levels within the organization. In the Discussion section, we explore the implications of our theorizing. For the benefit of practitioners, we provide suggestions to help them manage strategic drift and limit misalignment. In the Conclusion, we summarize our work and emphasize our intended contribution - the identification of linked processes at multiple levels of the organization that promote (or hinder) strategic alignment. Ultimately, our goal in this essay is to advance the study of strategic alignment by explaining how and why misalignment can occur.

2. Literature Review

2.1. Strategic Alignment

Strategic alignment has been defined as "…the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans" (Reich et al. 2000, p. 82). Others similarly define strategic alignment as "using IT in a way

consistent with the firm's overall strategy" (Palmer et al. 2000, p. 242), and "applying IT in an appropriate and timely way and in harmony with business strategies" (Luftman et al. 1999, p. 109). Researchers echo these definitions when they explain that strategic alignment of IT exists when an organization's goals and activities and the information systems that support them remain in harmony (McKeen et al. 2003), and that IT should be managed in a way that mirrors management of the business (Sauer et al. 1997). Literature reviews and meta-analyses consistently bear out that business and IT performance improve when firms experience strategic alignment (Chan et al. 2007a; Gerow et al. 2014b). This performance improvement is a result of the focused and strategic manner in which IT is used (Chan et al. 2006).

Strategic alignment is pursued in a dynamic competitive context (Agarwal et al. 2002; Piccoli et al. 2005; Sabherwal et al. 2001b), and one theoretical base that is increasingly being used in the study of strategic alignment is the dynamic capabilities framework (DCF) (Teece et al. 1997). In this framework, internal technological, organizational, and managerial processes enable firms to generate economic rents in settings of rapid change (Teece et al. 1997). The DCF emphasizes the importance of managerial capabilities, which 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 et al. 1989). Dynamic capabilities enable firms to adjust their strategies and resources to maintain and sustain competitive advantage (Wade et al. 2004).

We affirm that the dynamic capabilities framework can be seen as a suitable theoretical base from which to study strategic alignment. Researchers have noted that achieving a high degree of strategic alignment is a capability built upon a specific set of IT management competencies (Gupta et al. 1997; Peppard et al. 2004). To the extent that alignment results "from skill rather than luck, it is reasonable to regard alignment skill as a strategic resource capable of generating economic

rents" (Powell 1992, p. 119). Leaders must continually evaluate and renew IT resources and capabilities to avoid falling into misalignment (Benbya et al. 2006b). Firms that are able to build processes to promote and achieve a high degree of alignment between their business and IT strategies, even in the midst of a changing competitive environment, possess an dynamic organizational competency in the area of strategic alignment (Baker et al. 2011; Schwarz et al. 2010). Thus, the ability to promote and achieve a high degree of alignment is a basis upon which competitive advantage can be built.

In summary, we affirm foregoing research that states that strategic alignment is "…the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans" (Reich et al. 2000, p. 82). We view alignment as a measurable outcome, not as a process (Chan et al. 2007a). Nevertheless, we seek to add to the existing understanding of strategic alignment by describing the constellation of organizational processes, administrative routines, and employee activities that influence alignment. Some strengthen and promote alignment, while others weaken and impede alignment. Some are initiated by senior management and operate in a top-down manner, while others are driven by employees and influence alignment from the bottom-up. As we describe our model, we also affirm that a dynamic competency in strategic alignment exists within firms that are able to consistently and skillfully manage alignment-related processes (Baker et al. 2011; Schwarz et al. 2010).

2.2. Limitations of Strategic Alignment Research

In spite of the enduring interest in strategic alignment and the vast amount of research that has been conducted, limitations exist. First, IS researchers have noted a frequent use of variance models, but a comparative dearth of research that builds or utilizes process models (Chan and Reich 2007). One result of this preference for variance models is that extant research emphasizes

the "what" of alignment – that is, the variables and constructs – but provides little detail regarding the "how" – the processes and routines (Ciborra 1997; Pelletier et al. 2014). The actions that lead towards (and away from) alignment, as well as the sequence of activities and the timeline that is an inherent part of alignment thus remain understudied (Chan et al. 2007a; Sabherwal et al. 2001b; Street 2006).

The emphasis on factor models has yielded a traditional model of strategic alignment where alignment is a measurable outcome of business and IT strategies; and with alignment leading, in turn, to improved business performance[1] (e.g., Sabherwal et al. 2001a, Chan et al. 1997a, Venkatraman 1989, Tallon 2007, Hirschheim et al 2001). We nevertheless note that this model does not capture the reality of strategic co-evolution (Agarwal et al. 2002), where IT and business capabilities develop reciprocally and iteratively over time as they adapt to one another. Nor does it include strategic drift, a phenomenon observed when information systems "deviate from their planned purpose for a variety of reasons often outside anyone's control" (Ciborra 2000b, p. 4). The model does not reflect the reality that strategies evolve in an uneven, nonlinear fashion over the course of time and in response to changes in the competitive environment (Sabherwal et al. 2001c; Street 2006). Furthermore, it does not incorporate feedback mechanisms (Ciborra 2000). This model thus allows researchers to take a snapshot of alignment within an organization at a particular point in time, but is limited in explanatory power because it fails to address several additional complexities.

The integration of insights from both factor as well as process models has been highlighted as one potential way to stimulate theoretical development in strategic alignment research (Chan and

[1] We focus here on the characterization of alignment as profile deviation (see Venkatraman 1989 for a description of all six characterizations). We reserve the application of our arguments and ideas to other characterizations of alignment for future research.

Reich 2007). Indeed, as we have noted in the previous subsection, researchers have begun to conceptualize strategic alignment in the manner of a dynamic capability (Baker et al. 2011; Pelletier et al. 2014; Schwarz et al. 2010). We will similarly utilize the DCF as a lens through which to view strategic alignment and its related processes. We see the DCF as offering additional opportunities for theoretical development, inviting the examination of alignment at a more granular level, one that will enable the enumeration and description of the specific managerial processes, routines, and activities upon which the dynamic strategic alignment competency is built. To enumerate and link these processes, one tool that we will utilize in the Theoretical Development section is the causal loop diagramming approach of systems dynamics.

Second, because strategic alignment is often viewed as the result of top-down managerial planning and control processes (Chan et al. 2007a; Ciborra 2000), alignment research is sometimes seen to be mechanistic and unrealistic. This is because it does not fully account for the dynamism of the business environment (Chan et al. 2007a), the emergent outcomes that can be observed (Ciborra 2000), or the bottom-up processes that give shape to IT strategies (Ciborra 2000). Assumptions exist that strategic planning begins at the executive level (Henderson et al. 1993; Ives et al. 1993; Luftman et al. 1993), and while seminal research does well to examine not simply the leaders' intended IT strategy, but instead the realized IT strategy (Chan et al. 1997b, p. 126; Sabherwal et al. 2001a), this research could be enriched by directly comparing intended IT strategy to realized IT strategy and, perhaps more significantly, by examining reasons why IT strategy is not realized as it was originally intended.

Strategic management research has much to offer to the discussion of why strategies often deviate from leaders' original intentions, including insights on the importance of explicit strategic plans, clear communication from leaders, employees' acceptance and ownership of management's

strategic aims, and the degree of environmental dynamism (Baets 1992; Mintzberg 1978; Mintzberg et al. 1985). In the upcoming Theoretical Development section of this paper, we return to this discussion of how and why intended strategies may not be realized, and the processes of strategic deviation that can limit strategic alignment.

Third, much alignment research examines issues at the organizational or firm level, encouraging IS researchers to remark that beneficial work remains to be done at additional levels of analysis (Benbya et al. 2006b; Chan et al. 2007a; Tallon 2007; Tallon et al. 2011; Wagner et al. 2014). Specifically, operational, and process levels of analysis have been suggested as areas for examination in addition to the more common organizational level (Benbya et al. 2006b). Furthermore, the group and individual level have been suggested as well. The interaction between technology and people (Orlikowski et al. 2008) is creating new and heretofore unobserved ways for users to influence strategy from the bottom up. Our model therefore also seeks to identify the specific ways in which users are able to modify strategic initiatives, which can result in misalignment. Our model also seeks to identify the implications of communication practices and procedures at the operational level of analysis.

3. Theoretical Development

3.1. Strategic Alignment and the System Dynamics Approach

System dynamics is a methodology and modeling technique for understanding the behavior of complex, nonlinear systems. It was originally developed for application in managerial settings, but has since been applied to a host of economic, social, and ecological systems (Forrester 1961; Richardson 2012). It is well-suited to the examination of dynamic systems with interdependence, mutual interaction, feedback, and circular causality.

The system dynamics approach begins by modeling a system to be studied dynamically, generally utilizing the causal loop diagramming technique. Loops indicating feedback and circular causality reveal that the concept of endogenous change is fundamental in systems dynamics. Exogenous factors are triggers of system behavior, but the causes are more often contained within the system itself. Feedback loops may be either reinforcing and amplify deviations from the initial state for some component of the model (for instance, deviation from alignment), or they may be balancing and counteract deviations (promoting alignment). After modeling through causal loop diagramming, stocks (indicating the level of a factor or variable), flows (rates and directions of change), and time delays may added to the diagram. Mathematical equations are then developed linking the stocks and flows. A final step is the mathematical simulation of the system.

While the initial disciplinary home for system dynamics was operations management, it has also been employed in management and IS research. In IS research, the development of software for system dynamics modeling and simulation has been demonstrated (Druckenmiller et al. 2009). System dynamics has also been applied to develop and analyze formal mathematical models through simulation (Dutta 2001; Dutta et al. 2005) and to study technology implementation (Black et al. 2004). Perhaps more often, however, system dynamics has been employed in management and IS research as an approach for conceptual (non-mathematical) modeling to assimilate findings from prior literature or to represent findings from case research (Clark et al. 2007; Perlow et al. 2002; Repenning et al. 2002; Rudolph et al. 2002; Sutanto et al. 2008-9; Van Oorschot et al. 2013).

We employ causal loop diagramming in this paper to integrate the constructs and relationships that are associated with strategic alignment in extant literature [we reserve parametric modeling for future research]. Our causal loop diagram illustrates the system of alignment-related activities, its components, and its feedback loops. Our model has been developed by examining literature on

strategic alignment, including the identification of key constructs and causal relationships. As we describe our diagram in the upcoming subsections, each construct is first defined using prior literature, then the relationship from each construct to its related constructs is described, and finally a visual presentation of the model is given.

We see system dynamics as a particularly useful tool for examining strategic alignment for several reasons. Strategic alignment has been extensively discussed by researchers, and existing research features multiple perspectives and identifies a number of factors and processes that support (or hinder) alignment (Chan et al. 2007a; Gerow et al. 2014a; Gerow et al. 2014b). As this research stream has developed, researchers have increasingly acknowledged complexities such as co-evolution, punctuated equilibrium, feedback, mutual adaptation, and emergent outcomes (Agarwal et al. 2002; Benbya et al. 2006a; Ciborra 2000; Sabherwal et al. 2001b). These complexities expose the limitations of existing linear models – and indicate that the reality of strategic alignment may require a more nuanced explanation than has previously been presented. To address the complexity of strategic alignment and its related processes, we look to the system dynamics approach, an approach that enables us to develop a model that is dynamic, nonlinear, and feedback-oriented.

We begin by describing the formation and implementation of business and IT strategies, noting also the challenges associated with implementing strategy as it is intended. We also discuss strategy evaluation and the associated feedback mechanisms. Then, we discuss the outcome of strategic alignment, how the assessment of alignment can provide feedback to future strategic development, and finally, the effect of alignment on organizational performance.

3.2. Model Structure

3.2.1. Business Strategy Implementation and Evaluation

An important distinction has been made in prior literature between "leadership plans and intentions", which is the intended business strategy, and "what the organization actually did", the realized business strategy (Mintzberg et al. 1985, p. 257). Drift from intended strategy to realized strategy often occurs in business strategy implementation, and it has been argued that this type of drift is almost inevitable. For a strategy to be realized exactly as intended, three conditions must exist (Mintzberg et al. 1985). First, the organization must first have precise, concrete, and detailed intentions. That is, the intended strategy must be explicit and specific if it is to be understood by employees and faithfully implemented. This is not always the case, however, with many corporations having unknown, unclear, or ambiguous intended business strategies (Baets 1992; Reich et al. 2000). Second, the organization must also have intentions that either (a) emanate from senior leaders and are accepted fully by the employees, and/or (b) are shared wholeheartedly among the employees (Mintzberg et al. 1985). If employees do not accept, internalize, and "own" the strategy that has been proposed by senior managers, they will not be willing or able to implement it. Employee support and buy-in is imperative if intended strategies are to be fully realized. Third, no external environmental force can interfere with the implementation of the intended strategy (Mintzberg et al. 1985). The reality of environmental dynamism means that it will be difficult to implement even the most clearly-communicated, thoroughly-supported intended strategy without modification.

Finally, after the intended business strategy is developed, communicated, and a level of employee support has formed, a feedback process begins (Mintzberg et al. 1985). In this process, leaders may observe the difference between the intended business strategy and the realized

business strategy, or may notice some aspect of the realized business strategy that can be improved and use this information to reformulate a new (intended) strategy.

Explicit, clear, and precise intended business strategies have a positive influence on the communication of business strategy. Communication of those strategies, however, will likely be imperfect. Clear, detailed communication in which every aspect of the meaning embedded in the strategic statement is delivered to employees is possible in theory, but unlikely in practice. Even the best efforts of management will still only imperfectly communicate the strategic intent to employees. This may be because of a poorly-chosen method of communication, limited ability to "cast strategic vision" on the part of the top management team, inattention from employees, cultural or language barriers, or a variety of other causes. In any case, the inexorable process of deviation from the intended strategy has begun.

Once the intended business strategy has been communicated to employees, a level of employee support will form. Given that employees may not clearly understand every aspect of the strategy, that coalitions within the organization may resist the strategy or support alternate plans, and that employees' individual views may differ from those of senior management, it seems unlikely that complete, unanimous support will materialize. The strategy supported by the employees will thus be somewhat different from, or less than what senior management intended. As a result, the realized business strategy will exhibit deviation or drift from the original intent. The realized strategy will also differ as a result of changes in the competitive environment that have occurred during the strategy implementation process. By the time the intended strategy can be realized, a different one (even if only slightly different) will likely be more appropriate. Finally, the feedback relationship will likely result in adjustments to strategy in the next time period.

While it may be possible for an organization to clearly and explicitly define its strategic intentions, as in the first condition immediately above, the additional requirements of explicit and unambiguous communication, followed by unanimous assent from all members of the organization, and the necessity of an environment that is predictable, benign, or controllable are unlikely to be achieved. It seems highly probable that some degree of drift from intended business strategy to a realized business strategy will occur. This causal loop is therefore a reinforcing loop, one that amplifies deviation from the initial state of a variable (in this case, deviation from the intended business strategy). The completed loop is depicted in Figure 1, where "+" signs denote a positive relationship (i.e., a clearly articulated intended business strategy increases the likelihood that it will be communicated clearly), and a "-" symbol denotes a negative relationship (i.e., employee support for the business strategy will likely be less than unanimous, leading to a realized business strategy that differs from what was intended). Environmental dynamism is exogenous in this structure, while the other constructs are shown as endogenous.

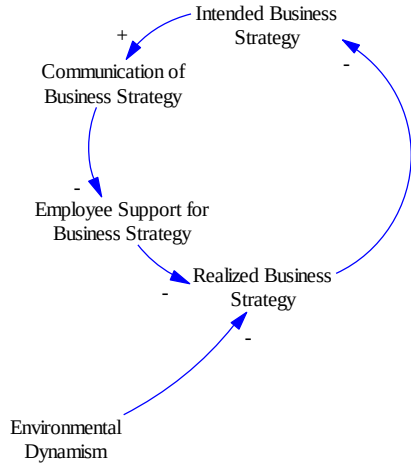

Figure 1. Business Strategy Implementation and Evaluation Structure

3.2.2. IT Strategy Implementation and Evaluation

Following from the section on business strategy immediately above, we argue that drift from an intended IT strategy to a realized IT strategy can occur for similar reasons. That is, drift occurs when the IT strategy is communicated imprecisely, when employee support is incomplete, and when the competitive environment changes.

First, communication between business and IT executives has been repeatedly emphasized as a way to develop an IT strategy that is clear, feasible, implementable, and ultimately aligned with the overall business strategy. Important initial steps in strategic IS planning (SISP) include business and IT executives collaborating to gather information about the competitive environment, consider new technological and strategic opportunities, and discuss how IT capabilities can help the organization maintain flexibility and competitive advantage (Grover et al. 2005; Peppard et al. 2004; Schwarz et al. 2010; Wade et al. 2004). As SISP proceeds, CEO participation in IT planning and CIO participation in business planning helps firms clearly articulate an IT strategy (Kearns et al. 2003a). Similarly, giving the CIO visibility among senior executives promotes a clearly-defined IT strategy (Agarwal et al. 2002). Furthermore, evaluating senior executives by noting their innovative use of IT, allowing IT to demonstrate innovative ideas, embedding IT in multiple business processes, and emphasizing the ways IT can provide strategic flexibility are all ways to communicate IT strategy and its importance across the business (Agarwal et al. 2002).

When these various sub-processes are not an integral part of strategy planning and execution, it will be difficult for the organization to develop a specific, clearly-articulated IS/IT strategy that can be communicated to managers and employees in a way that facilitates implementation as intended. In organizations with mature strategic IT communications processes, the understanding of IT strategy by employees, including even non-IT department employees, is pervasive, exists at

all levels of the organization, and is facilitated by multiple liaisons at these levels (Luftman 2000). In the absence of cross-departmental and multilevel communication, leaders will find it challenging to develop a shared understanding and clearly communicate their strategic plans to their managers and other employees (Benbya et al. 2006b). Based on this foregoing research, we assert that clear communication of the intended IT strategy is an essential pre-requisite to gain employee understanding and support.

Second, while strategies are developed by senior managers, they are implemented at the lower levels of an organization's hierarchy. This makes it important to study the actions of employees (end-users) and middle managers in the context of alignment (Chan et al. 1992; Hsiao et al. 1998), and to identify potential causes and mechanisms for bottom-up effects (Klein et al. 2000a; Klein et al. 2000b).

As we have noted, one potential avenue through which drift could occur is when employees do not accept their organization's strategic objectives relating to IT. Ample evidence exists in research of employees not accepting the intentions of management. Employees who disagree with their organization's IT plans may refuse to comply, either actively or passively. User actions may be seemingly benign, such as when nonuse of a system takes place. Nonuse occurs when users are unaware of a system's existence, are inadequately trained to use it, or fear the technology (Markus 1983). User actions can also be deliberate but subtle, such as when shadow systems are created or when workarounds are preferred (Ciborra 2000; Gasser 1986; Rondeau et al. 2006). Deliberate resistance occurs for a variety of reasons, such as user characteristics, system design deficiencies (Venkatesh et al. 2003), or because of some way in which some feature of the system interacts with the organizational context, such as when a new information system precipitates a change in users' power and political status (Lapointe et al. 2005; Markus 1983). Additionally,

users can actively and purposefully deviate from and subvert intended IT strategies by, for example, resisting the use of new information systems, or sabotaging them (Ciborra 2000). The level of aggression with which new systems are resisted depends on user characteristics, system characteristics, and sociotechnical interactions; these forms of resistance can be particularly noticeable when distinct subcultures or workgroups with strong identities exist within the organization (Lapointe et al. 2005; Ravishankar et al. 2011).

The ability of users to initiate drift may be growing. Within the last decade, there has been a shift in the workforce and employees are now more educated, more tech-savvy, and more aware of technologies than their predecessors. "When computer-savvy young people are confronted with older, more difficult-to-use technologies at work, they get frustrated. There's a good chance that they'll find their own 'work-arounds' that allow them to use their own devices, regardless of company policy" (Twentyman 2011, p. 2). Well-known examples include the widespread user push to use iPhones in corporate environments in spite of nontrivial security issues (Kaneshige 2010), and even U.S. President Barack Obama's request for the White House to alter its IT security policy to allow him to carry a smartphone (Stewart 2009). Still another illustration of this trend towards tech-savvy users is seen in the growth of bring-your-own-device (BYOD) computing environments. CIOs are concerned about the growing number of BYOD-related issues, which have arisen because of the growing consumerization of IT and the flexibility and ease with which users can add or subtract different hardware and software components from IT platforms (Bergstein 2012; Messmer 2013). Furthermore, it has been noted that as new IT capabilities are introduced, either directly by the firm or in the broader marketplace, the needs of users change and co-evolve with these capabilities in potentially unforeseeable ways (Benbya et al. 2006b; Orlikowski et al. 2008). Users are thus a source of strategic evolution, change, and drift.

End-users are not the only employees of interest in the discussion of drift, however. The role of middle managers in strategic management is of growing interest (Hsiao et al. 1998; Nan 2011; Wooldridge et al. 2008). Their actions provide another bottom-up mechanism that may lead to drift and ultimately hinder strategic alignment. Lower-level managers, in IT and elsewhere, may "sell" issues to senior managers to induce organizational change (Dutton et al. 2001). These individuals sell issues by directing the attention and understanding of their seniors toward events and trends that may affect their group's or department's performance (Dutton et al. 1993). Issue-selling takes various forms, such as packaging, presentation, types of appeals, and bundling issues together (Dutton et al. 1993). Thus, altered IT strategies could emerge from middle managers' exhortations, and these strategies may sometimes be in conflict with pre-existing top-down strategies. This is more likely to occur in organizations that are younger, since few dominant norms have been established; and larger, since size hinders integration and increases the number and variety of goals pursued (Cyert et al. 1963).

The third requirement for a strategy to be realized exactly as intended is that no external environmental force can interfere with the implementation of the strategy. Indeed, in IS research, it has been noted that alterations in strategy can occur, and in some cases should occur, because of changes in the competitive environment (Tanriverdi et al. 2010). Case study evidence reveals that one of the triggers of revolutionary change in IT strategy is a shift in the competitive environment (Sabherwal et al. 2001b). New technologies may emerge during the time between strategy formulation and implementation (Yoo et al. 2010). These technologies may enable the development of new products, processes, or services. Or, new technologies may render obsolete some portion of the existing products, processes, or services, or the entire strategic thrust that supports them (Brynjolffson et al. 2014). Conversely, environmental stability promotes strategic

alignment as strategies are realized as they were initially planned and intended (Kearns & Lederer, 2004).

Figure 2 illustrates the relationships that we have described. While the absence of an intended IT strategy would have a negative influence on the ability of an organization to communicate that strategy, the converse is also true. That is, the existence of an explicit intended IT strategy has a positive influence on the ability of the firm to communicate that strategy to employees. The link from strategic communication to employee support is negative, as communication is often imperfect and incomplete. Despite the best efforts of senior management, meaning can be "lost in translation" to employees. Then, because employees may resist strategic IT initiatives (either actively or passively, as described above), employee support will be less than complete and there will be a negative effect, where the intended business strategy deviates from what was originally intended. As we noted in the prior subsection on business strategy implementation and evaluation, when deviations from intended strategies are observed, a feedback process begins. This feedback relationship enables the updating of the intended IT strategy. We have modeled this feedback relationships as a negative one, indicating that feedback leads to adjustments and changes in the intended IT strategy in future time periods. Finally, as in the processes of business strategy implementation, the competitive environment will likely change in such a way as to lead to a shift in strategy from what was originally intended. Thus, a negative relationship exists here as well. This causal loop is a reinforcing loop, one that amplifies deviation from the intended IT strategy.

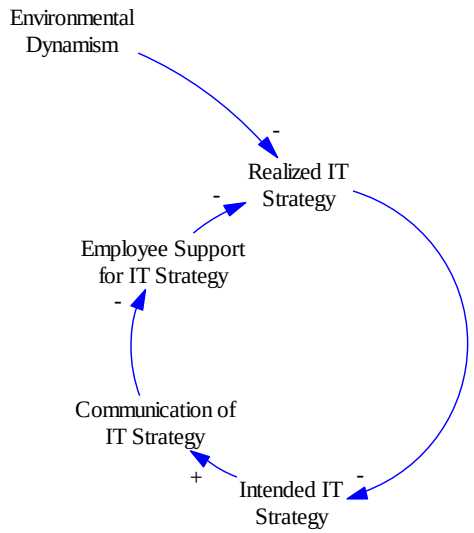

Figure 2. IT Strategy Implementation and Evaluation Structure

3.2.3. Strategic Co-Evolution Structure

Another link between business and IT strategies that has been described in prior research is that of strategic co-evolution. Strategic co-evolution means that mutual adaptation takes place where IT and business capabilities develop reciprocally and iteratively over time (Agarwal et al. 2002; Benbya et al. 2006b; Peppard et al. 2003). While historically, the IT function of an organization would adapt and develop capabilities to enable the execution of the business strategy, this lagging role for IT is no longer common or ideal. Instead, the IT function of the modern organization has the opportunity to help the firm identify and exploit IT-enabled business opportunities. While IT may still lag strategic change in some instances, it is becoming increasingly common for IT to lead strategic change (Burn 1997).

Suggested managerial actions to stimulate co-evolution include incentivizing IT executives to experiment with new business models and business practices, evaluating IT executives' performance in terms of strategic business drivers and metrics, and linking business executives'

compensation to IT-enabled innovation (Agarwal et al. 2002). These actions indicate that the outcomes of strategies should be assessed and used as inputs to guide future strategic development. Indeed, feedback in the strategic implementation process enables co-evolution to take place (Lewin et al. 1999), and can be understood as a form of organizational learning (van der Zee et al. 1999).

For these reasons, we incorporate additional feedback relationships into our model from the realized business strategy to the intended IT strategy, and from the realized IT strategy to the intended business strategy. In Figure 3, we illustrate that these feedback loops lead to changes in the intended strategies, and thus are negative relationships that amplify deviation from the initial intended strategies.

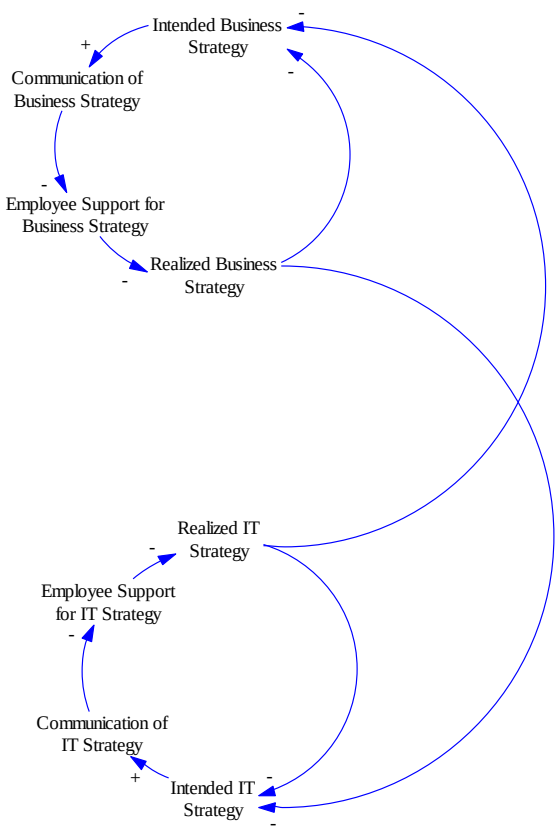

Figure 3. Strategic Co-Evolution Structure

3.2.4. Strategic Alignment Structure

Strategic alignment is consistently modeled as a function of realized business strategy and realized IT strategy (Chan et al. 1997a; Sabherwal et al. 2001a; Sabherwal et al. 2001b). Indeed, a commonly-adopted definition for strategic alignment, and the one utilized in this research, is "…the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans" (Reich et al. 2000, p. 82). Strategic alignment is thus an outcome of the strategy implementation process, but it also serves as an input to other constructs in the model. First, the degree of strategic alignment can be assessed and monitored. This measurement can then be used to decide if strategic changes are necessary in either the business or IT strategies in order to maintain an existing degree of alignment or pursue a higher degree. These feedback relationships from alignment to intended strategies are illustrated in Figure 4 as negative relationships because they result in strategic adjustments rather than stasis.

Second, one of the most thoroughly-established relationships is the link from strategic alignment to organizational performance (Chan et al. 2007a; Gerow et al. 2014b). Organizational performance has been defined and measured in various ways, including in terms of financial performance (ability to gain competitive advantage, higher profits, or stock values), productivity (improved ratio of inputs to outputs), and/or customer benefit (total benefit of a given purchase to consumers) (Gerow et al. 2014, pp. 1161-1162). While some variation exists in the size of the effect depending on the specific manner of measurement of the dependent variable, the relationship from alignment to organizational performance is consistently positive (Chan et al. 2007b; Gerow et al. 2014b). This relationship is also illustrated in Figure 4, the final portion of our model.

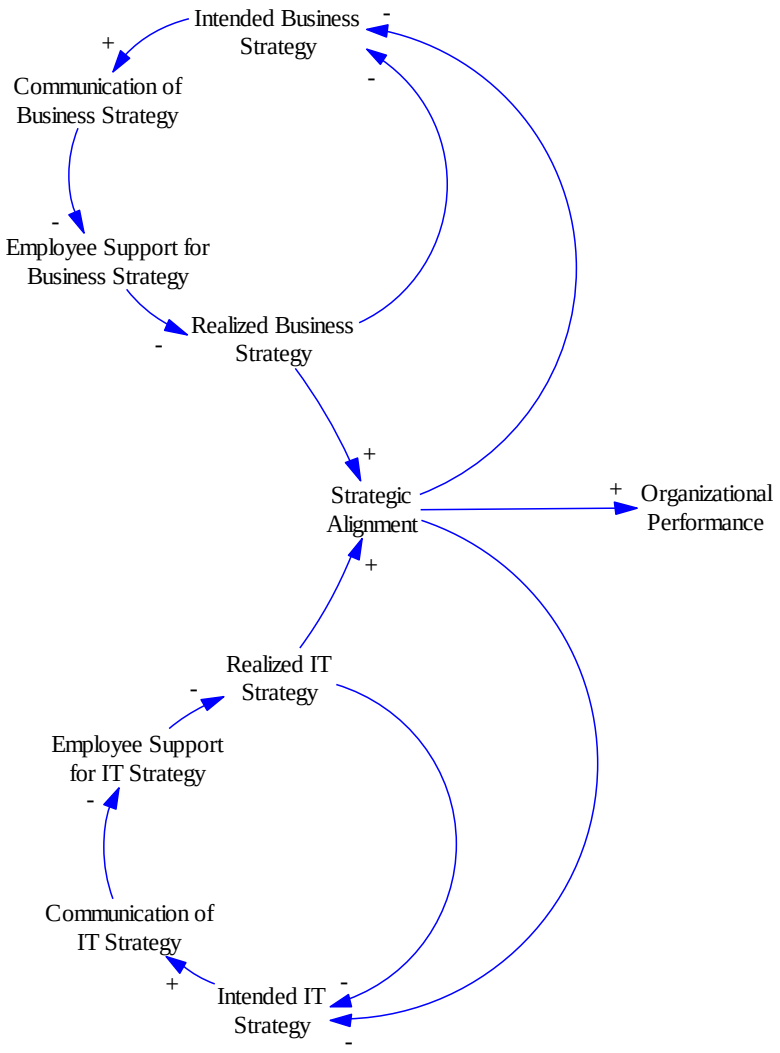

Figure 4. Strategic Alignment Structure

3.2.5. Model Summary

We now present our full model, with all substructures included, as Figure 5. The relationships in the model are described in Table 1, which lists the constructs, along with their definitions and the literature that supports each definition and relationship.

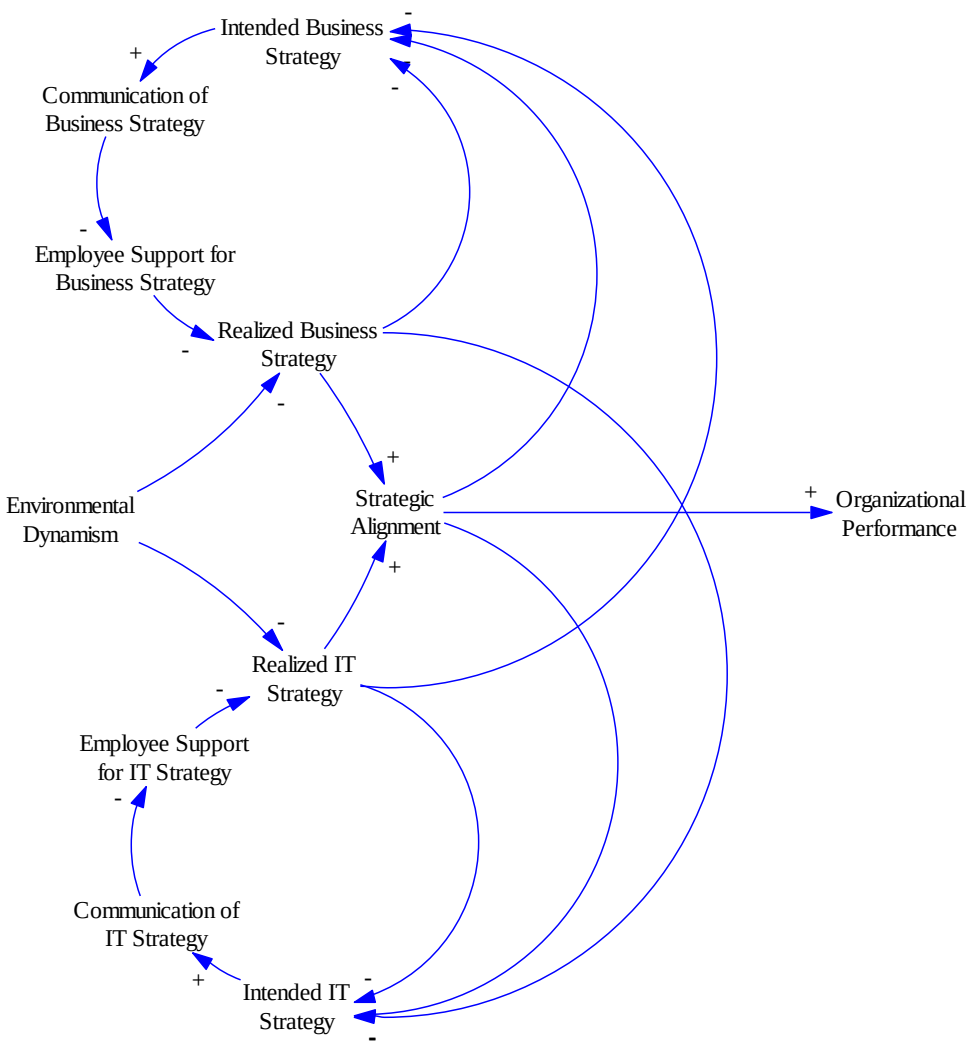

Figure 5. Causal Loop Model of Strategic Alignment and Related Processes

Table 1. Relationships In Causal Loop Model		
Relationship		
Causal Construct	**Response Construct**	**Supporting Literature**
Intended Business Strategy *Plans and intentions of the leadership team(Mintzberg 1978; Mintzberg et al. 1985)*	Communication of Business Strategy *Transmission of the intended business strategy from leaders to employees using written, verbal, or other means*	(Baets 1992; Mintzberg 1978; Mintzberg et al. 1985; Reich et al. 2000).
Communication of Business Strategy	Employee Support for Business Strategy *Degree of acceptance, agreement, and support for leadership's communicated strategic plans*	(Mintzberg 1978; Mintzberg et al. 1985)
Employee Support for Business Strategy	Realized Business Strategy *Actions that the organization actually took (which may and likely will differ from the plans and intentions of the leadership team)*	(Mintzberg 1978; Mintzberg et al. 1985)
Environmental Dynamism *Rate of change in a firm's competitive environment, including the rate at which consumer preferences change, competitors enter the market, and new technologies emerge*	Realized Business Strategy	(Mintzberg 1978; Mintzberg et al. 1985)
Realized Business Strategy	Intended Business Strategy	(Mintzberg 1978; Mintzberg et al. 1985)
Intended IT Strategy *Plans and intentions of the leadership team with regard to IT*	Communication of IT Strategy *Transmission of the intended IT strategy from leaders to employees using written, verbal, or other means*	(Agarwal et al. 2002; Chan et al. 1997b, p. 126; Grover et al. 2005; Kearns et al. 2003a; Luftman 2000; Mintzberg 1978; Mintzberg et al. 1985; Peppard et al. 2004; Sabherwal et al. 2001a; Schwarz et al. 2010; Wade et al. 2004)
Communication of IT Strategy	Employee Support for IT Strategy	(Chan et al. 1992; Luftman 2000) (Ciborra 2000; Gasser 1986; Rondeau et al. 2006) (Lapointe et al. 2005; Markus 1983; Ravishankar et al. 2011)
Employee Support for IT Strategy	Realized IT Strategy *Actions that the organization actually took (which may and likely will differ from the plans and intentions of the leadership team, including IT leaders)*	(Ciborra 2000; Gasser 1986; Rondeau et al. 2006) (Chan et al. 1997b, p. 126; Lapointe et al. 2005; Markus 1983; Mintzberg 1978; Mintzberg et al. 1985; Ravishankar et al. 2011; Sabherwal et al. 2001a)
Environmental Dynamism	Realized IT Strategy	(Kearns et al. 2003a; Sabherwal et al. 2001b)
Realized IT Strategy	Intended IT Strategy	(Mintzberg 1978; Mintzberg et al. 1985)
Realized IT Strategy	Intended Business Strategy	(Agarwal et al. 2002; Benbya et al. 2006b; Burn 1997; Lewin et al. 1999;

		Peppard et al. 2003; van der Zee et al. 1999)
Realized Business Strategy	Intended IT Strategy	(Agarwal et al. 2002; Benbya et al. 2006b; Burn 1997; Lewin et al. 1999; Peppard et al. 2003; van der Zee et al. 1999)
Realized Business Strategy	Strategic Alignment *"…the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans"*	(Chan et al. 1997b, p. 126; Sabherwal et al. 2001a)
Strategic Alignment	Intended Business Strategy	(Chan et al. 1997a; Sabherwal et al. 2001a; Sabherwal et al. 2001b).
Realized IT Strategy	Strategic Alignment	(Chan et al. 1997b, p. 126; Sabherwal et al. 2001a)
Strategic Alignment	Intended IT Strategy	(Chan et al. 1997a; Sabherwal et al. 2001a; Sabherwal et al. 2001b).
Strategic Alignment *"…the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans"*	Organizational Performance *Measured in terms of financial performance (ability to gain competitive advantage, higher profits, or stock values), productivity (improved ratio of inputs to outputs), and/or customer benefit (total benefit of a given purchase to consumers)*	(Chan et al. 1997a; Chan et al. 2006; Gerow et al. 2014b; Hitt et al. 1996; Kearns et al. 2003b; Raymond et al. 2008; Reich et al. 1996; Reich et al. 2000; Sabherwal et al. 2001a)

4. Discussion

4.1. Theoretical Implications

The causal loop model presented here extends prior research on strategic alignment in three key ways. First, we emphasize that alignment is a product not only of exogenous variables, as is commonly assumed in factor-model-based research, but is perhaps better-understood as a product of the structure of the system of alignment-related processes within the organization. Our focus is inward, on the characteristics of the system that can lead to misalignment; and our use of causal loops represents an argument that the relevant causes of misalignment are found within a closed system, rather than outside of it. While we do not completely exclude exogenous factors (environmental dynamism is modeled exogenously), we view it primarily a trigger of system

behavior, with more substantial influence on alignment flowing from the endogenous constructs that we have identified.

The endogenous perspective is illustrated in feedback relationships, one of the primary features of our model. Such relationships exist, by definition, when information makes its way through a system and returns to its point of origin in some form (Richardson 2012), such as from an intended business strategy to a realized one, and then back again. The loops in our model highlight several reasons for misalignment and strategic change over time. More importantly though, they show that destabilizing forces are built directly into the system of alignment-related processes. Our emphasis on endogeneity and our description of a closed system thus represents a shift from how strategic alignment has traditionally been viewed. It indicates that sources of misalignment are paradoxically built into the structure of the system itself. We encourage continuing research that takes a systems perspective (e.g., Nan 2011; Richardson 2012; Clark et al. 2007) on strategic alignment, particularly research that examines or models the stabilizing and destabilizing elements of that system.

Second, we extend research on the dynamic capabilities framework (DCF). In the DCF, a firm's internal technological, organizational, and managerial processes enable the creation of competitive advantage (Teece et al. 1997). The majority of the constructs in this paper's model have a negative influence, amplifying deviations from the initial intended strategy. Perhaps then it is unsurprising that with so many potential stumbling blocks, alignment is such a challenging issue for researchers to explain and practitioners to implement. Our model reveals the set of processes that must be managed successfully if an organization is to minimize misalignment. We thus extend research on the dynamic strategic alignment competency (Baker et al. 2011; Pelletier

et al. 2014; Schwarz et al. 2010) by identifying some of the technological, organizational, and managerial processes that provide competitive advantage through the strategic use of IT.

Third, our model indicates that the search for the causes of misalignment must be conducted in different portions of the organization than it has generally been in the past. In addition to the often-studied organizational level, investigation at the process-, group-, and individual-level is required. Strategies exist at the organizational level, but are implemented (and resisted) at the group or individual levels – and for a variety of reasons.

Our model represents the constellation of processes that influence alignment, including top-down processes such as strategic formation and the communication of strategies, and also including bottom-up processes like employee resistance. We link strategic management research on strategic drift and IS research on user resistance to strategic alignment as potential reasons for misalignment. Bottom-up processes with end-users playing a major role are not to be overlooked in strategic alignment research. We call for additional research focusing on the bottom of the organizational hierarchy. Middle managers and end-users represent an important but understudied population in IS research (Nan 2011). Perspectives such as agency theory and institutional theory can provide insight into problems that have a cooperative organizational structure (Eisenhardt 1988; Eisenhardt 1989), such as the communication clarity and employee buy-in elements of our model. Examining these employees and their activities will extend and emphasize the idea that alignment is indeed influenced by multilevel processes (Benbya et al. 2006b).

Before proceeding, we pause to consider the types of organizations to which our ideas might generalize, and those to which they might not. Strategic alignment, strategic drift, and the resulting misalignment should be observable across a wide variety of industries and firm types. In the same way that the concept of strategic alignment is a broadly applicable, we suggest that our arguments

will be broadly applicable as well. In line with our arguments, however, we note that drift and misalignment will likely be most observable in industries with a high level of environmental dynamism, where strategies will require frequent readjustment. In our model, environmental dynamism is an exogenous trigger for misalignment. The greater the uncertainty in the competitive environment, the more information must be processed by leaders, decision-makers, and employees during task execution in order to achieve the intended objectives (Galbraith 1984). In such a situation, this exogenous trigger will likely exacerbate the influence of the deviation-increasing constructs in our model. Specifically, in settings with a high level of environmental dynamism, more information must be assimilated in strategy formation, more must be communicated to employees, and more must be accepted by those employees. We have argued that each of these processes increases misalignment. Thus, we suggest that where environmental dynamism is low, such as in mature industries, in those with a low level of innovation, or in those with high barriers to entry, misalignment and the need for frequent strategic readjustment will be reduced. Similarly, where environmental dynamism is low or can be reduced through factors like government regulation or the firm's application of monopoly power, misalignment should be reduced.

Additionally, we suggest that misalignment should be most observable in firms of larger size where communication of strategic initiatives, the process of building employee support for those initiatives, and strategic implementation are more complex than in smaller firms. Employee networks that are large and bureaucratic will be ineffective in developing dynamic capabilities to respond to changes in the competitive marketplace, while smaller, efficient, well-coordinated ones will be more effective (Teece 2007). We suggest that strategic drift and misalignment will be most observable in firms where IT governance processes are less mature than in firms where such governance processes are more mature. And finally, drift clearly seems more likely to occur where

organizations have chosen a decentralized model of IT governance (Tiwana 2009), encouraging independent decisions and requiring strong communication from senior leaders when firmwide strategic statements are developed. We look forward to future research that will be able to directly examine each of these potential boundaries of generalization.

4.2. Practical Implications

Practitioners seeking to avoid misalignment should consider ways in which they can manage or limit strategic drift. Drift can be managed through both formal as well as informal controls. Both types of controls should be utilized as governance is achieved through both control and collaboration (Sundaramurthy et al. 2003). For instance, with IT strategies, rigorously-codified IS governance frameworks, such as COBIT (Control Objectives for IT) and ITIL (IT Infrastructure Library) may be helpful formal controls. These are auditable lists of processes that organizations are recommended to implement, so that their IT systems and services remain usable and useful, as well as aligned with their business. The ITIL framework outlines a series of processes to help managers use the firm's strategy statements to identify key business relationships, estimate demand for IT services from internal users and external value chain partners, and design a cost-effective portfolio of IT services. After designing this portfolio, additional processes exist for operations and change management. These frameworks are intended to develop a culture of market-responsive IT and continual IT service improvement.

Such guidelines can assist with the formation, explication, and communication of strategies, and can also help identify areas in which systems are not meeting users' expectations, alerting management to potential areas where strategy may be modified by middle managers and end users. Additionally, senior managers may wish to implement procedures whereby middle managers are substantively involved in the strategy formation process. Such procedures have the effect of

improving communication, monitoring middle managers' as well as their direct reports' commitment to a strategic initiative, and gauging social or political motivations for resistance (Huy 2011; Sharma et al. 2003; Wooldridge et al. 1990).

Informal controls, while less-commonly discussed, should not be overlooked in managing drift and misalignment. Researchers have argued that informal or implicit control systems, based on shared norms, can be more effective for achieving coordination than formal control systems that depend on explicit rules and regulations (Denison et al. 1995; Ouchi 1979). In the IT department, informal structures play a much more important role in improving IS performance than formal structures (Chan 2002). Instead of relying on strict controls to enforce the use of official systems, well-developed personal relationships may be more effective at preventing workarounds or the use of shadow systems. Although informal governance has been said to be unrepeatable and ad-hoc (Boh et al. 2007), its value lies in the shared understandings it creates in the working environment. Managers will no doubt also want to assess the effectiveness of each of these aforementioned drift-management procedures.

Practitioners should also note that deviation from intended strategies can at times have beneficial effects. Organizations with an entrepreneurial orientation create value and gain competitive advantage by combining resources in a novel way to take advantage of opportunities in the environment, often resulting in new ventures, products, services, processes, and technologies (Morris 1998). In IS/IT research, it has been noted that one of the keys to successful entrepreneurship is improvisation, which is "the ability to spontaneously reconfigure existing resources to build new operational capabilities to address urgent, unpredictable, and novel environmental situations" (Pavlou and El Sawy, 2010, p. 443). Organizations that have an entrepreneurial culture choose to closely watch and quickly respond to changes in the competitive

environment. Rather than committing to an inflexible strategy, entrepreneurial firms have the outlook that enables the creation of valuable strategic options (Raynor 2007). Rather than simply observing, or even guarding against changes in market conditions, they build flexible organizations that respond rapidly. Such organizations may be more willing to adjust strategy from what was originally intended, and thus may be more likely settings in which to observe strategic drift. Nevertheless, practitioners should carefully consider the potential benefit that innovation and experimentation offer, even though they may lead to a temporary misalignment.

Similarly, the IT department can use innovative (but non-standard and non-authorized) technologies to launch discussions within the organization about device and system choice, and about the functional needs of employees (Twentyman 2011). The IT function can capitalize on these opportunities for technological experimentation to burnish its image as responsive, proactive, and enabling. Overall, senior managers are advised to consider ways they can encourage and reward experimentation and innovation by middle managers and end-users, effectively crowd-sourcing ideas from within the firm, with the ultimate goal of enhancing organizational capabilities through IT.

5. Conclusion

In spite of decades of research into strategic alignment, it remains an elusive goal and a major cause for concern among practitioners. Achieving a high degree of alignment over time is challenging not only because it involves numerous processes and sub-processes, but also because it involves various stakeholders in multiple departments and at multiple levels of the organization. While factor models have presented specific conclusions and actionable insights, the analysis here presents a more nuanced picture, one of strategic alignment as a complex, nonlinear system with interactions, feedback, and circular causality.

Our perspective enriches existing research by identifying not only the factors, but also the processes, routines, and sequences that shape alignment, focusing on the "what" of alignment as well as the "how". The constructs of strategic drift, the feedback relationships, and strategic co-evolution all represent ways in which misalignment can occur. These ideas have the potential to reshape the way in which strategic alignment is discussed and investigated, because they imply that, besides alignment itself, the strategy formulation and governance processes that promote alignment, and the strategic drift that retards and prevents alignment, should be studied as well. We hope that this paper will encourage others to continue this process of reformulation and rediscovery.

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