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**MAKING SENSE OF STRATEGIC ALIGNMENT:  
AN INTERPRETIVE VIEW OF ALIGNMENT PROBLEMS & PRACTICES**

**MARK K. FIEGENER**

UNIVERSITY OF WASHINGTON-TACOMA

**JAMES R. COAKLEY**

OREGON STATE UNIVERSITY

**ABSTRACT**

The I/S budget of many corporations extends well into the millions of dollars, and yet executives often question whether these investments fully support their strategic objectives, and whether opportunities to further exploit information technology for competitive advantage are being overlooked. The purpose of this research was to learn more about how managers try to maintain the *strategic alignment* of their business and I/S strategies over time. The paper reports the results of a pilot study that explored three important questions about the alignment process: what are the different administrative mechanisms through which managers enact strategic re-alignment, how are these mechanisms used in practice, and what are the common problems that inhibit their effectiveness?

**INTRODUCTION**

A key part of the success of Company A, a wholesaler of specialty hardwood building supplies, can be attributed to the integrated order processing and purchasing system it developed in the early 1980's. The cost efficiencies generated by the system enabled the company to under-price all competitors in its region for nearly two decades. However, the rapid consolidation of retailers is shifting the basis of competition among wholesalers, such that materials management and customer service capabilities are becoming increasingly

important. Company A is trying to implement several new initiatives to meet this competitive challenge, including next-day delivery and Electronic Data Interchange with customers, but the company's I/S function is slow to adapt to the changing demands.

Company B provides trucking services for a number of manufacturing firms in its region. To facilitate truck scheduling and routing, in 1988 the company developed an innovative inter-organizational information system that linked all of its customers. As the number of firms and geographical areas supported by the system grew during

the 1990's, Company B's I/S staff developed superior capabilities in the development and management of network applications. The Chief Information Officer (CIO) believes these capabilities, if adequately nurtured, could enable the company to greatly expand its customer base and offer a continuing stream of new information services to customers. However, many business executives in Company B are alarmed about the growing I/S budget and are recommending that the network operations be outsourced to a national firm.

Company C, a Health Maintenance Organization that markets to corporate clients, has leveraged its strong I/S capabilities to build tight service linkages between its suppliers (participating health care providers), corporate customers, and the employees of its corporate customers. The company maintains a service advantage through its ability to quickly assimilate cutting-edge information technology into its operations. However, under a new CEO, the strategic priorities of the business have gradually shifted over the past two years to include a greater emphasis on sales growth via market expansion. Marketing and sales managers have recently begun to complain about missed project deadlines, lengthy project backlogs, and difficulty in gaining I/S support for new marketing proposals.

These scenarios illustrate three symptoms of the same problem: the lack of *strategic alignment* between an organization's I/S strategy and its business strategy. Company A's efforts to implement a new business strategy are being frustrated by an I/S strategy that appears anchored to the past. Company B is losing an opportunity to gain competitive advantage because executives are unaware of the strategic potential of its own I/S capabilities. Company C's business and I/S strategies are slowly drifting out of alignment as business priorities change without corresponding reallocations of I/S resources. In each case the alignment problem emerged from past decisions made, or not made, by business and I/S managers who undoubtedly were trying

to maintain strategic alignment. And yet managers in all three companies are coming to realize that these earlier decisions were not as well aligned as they believed at the time, and all are now analyzing how to re-align their strategies. Although the results of surveys of executives and CIOs affirm that strategic alignment is one of the most important I/S issues facing organizations, little research has been conducted that examines how alignment unfolds over time, why alignment problems emerge, and what managers try to do about them. As a result, our understanding of the managerial actions that influence the alignment process remains limited [5] [22] [26].

The present research focuses directly on the managerial aspects of the strategic alignment process by investigating the administrative mechanisms through which business and I/S managers detect, interpret, and attempt to correct the *misalignments* in their strategies. The paper addresses three important questions about the alignment process: what are the administrative mechanisms through which managers enact strategic re-alignment, how are these mechanisms used in practice, and what are the common problems that inhibit their effectiveness?

### STRATEGIC ALIGNMENT BACKGROUND

Although no precise definition of strategic alignment has gained widespread acceptance in the MIS research literature, many authors share a similar general impression of the term. The common thread in descriptions of the term is that current and future strategic decisions in the business domain somehow take into account those being made in the I/S domain, and vice versa. Strategic alignment confronts managers with a dual imperative: they must deduce the I/S applications that will best support the execution of the business strategy [18], and they must also proceed inductively to formulate new uses of information technology that may alter the business strategy and create potential sources of competitive advantage.

Research of strategic alignment can be divided into two streams, according to whether a study focuses on the "content" of the strategic decisions being aligned or the "process" by which alignment unfolds. Content studies tend to conceptualize strategic alignment as the association between holistic indicators of business and I/S strategies and objectives [6] or between configurations of business and I/S decisions that reflect the respective strategies [5]. Studies of the process of strategic alignment investigate how alignment decisions are made, or should be made. Much of the work in this research stream is normative, and proposes methodologies for

integrating strategic business and I/S decisions. For example, Henderson and Venkatraman's strategic alignment model [12] articulates four alignment perspectives, or decision sequences, to follow in order to integrate business, technological, and infrastructure decisions into a common organizational direction. Other process research has focused on describing patterns in the alignment activities of organizations [23] [25]. For example, Teo and King [25] uncovered four common patterns of integration between business planning and I/S planning, described how these patterns tend to evolve over time, and identified contingency factors that influence the patterns. A related line of research examines the effectiveness with which particular administrative mechanisms help integrate I/S into the organization. The results of these studies show that the level of I/S integration is influenced by the nature of the CEO/CIO reporting relationship [18], the sharing of business and I/S strategic plans among executives [17], the level of involvement of I/S managers in business strategic planning processes [4], and the level of business executive involvement in strategic I/S planning processes [16] and I/S steering committees [8]. The role of executive perceptions [13] and the shared understanding between business and I/S managers [22] are also being explored as key influences on I/S integration and strategic alignment.

Despite the growing research interest in strategic alignment, our understanding is limited because prior research has not adequately addressed important complexities of the alignment process. Implicit in most conceptualizations of I/S strategic alignment is the assumption that strategy is "deliberate" [19] and reflects the conscious intentions of executives. Given this assumption, the strategic alignment process is typically conceptualized in static terms, as the outcome of a comprehensively rational planning exercise to produce sets of business and I/S decisions that match or fit together. However, strategy also has an unplanned, "emergent" character [19] in that managers throughout the organization respond to their local problems and opportunities and make many strategic decisions outside of the formal planning systems. This emergent character virtually ensures that business and I/S strategies will unfold along unanticipated paths and at different rates, such that strategic misalignments will be inevitable. Hence, the more interesting, and far more relevant, challenge for executives and researchers is to understand the dynamics of I/S strategic alignment and the ebbs and flows of misalignment. Because of their static assumptions about the nature of strategy and strategic alignment, earlier research models fail to account for the forces that create and moderate misalignments, and so

provide little help in understanding how and why an organization's strategic alignment might change over time. Furthermore, most research has been focused at an organizational rather than managerial level of analysis, and has not investigated how executive perceptions and behaviors influence strategic alignment [5] [26]. Finally, empirical studies of the administrative mechanisms believed to facilitate strategic alignment have collectively examined only a few mechanisms – usually just one per study – and so have overlooked the possible interacting effects of multiple alignment mechanisms. Consequently, we know little about how strategic alignment is enacted in practice, the managerial cognitions and behaviors that influence and are influenced by alignment, and the comprehensive set of mechanisms through which executives try to manage the alignment process over time. The purpose of our study is to shed light on these issues. But first, we outline the conceptual model that guided our research.

#### **AN INTERPRETIVE VIEW OF STRATEGIC ALIGNMENT**

If one begins with the assumption that strategy is an unfolding pattern in the stream of decisions, both planned and unplanned [19], then the conceptualization of the strategic alignment task changes dramatically. Instead of being the formulation of matched sets of business and I/S decisions at periodic intervals, strategic alignment becomes a process in which business and I/S decisions are continually integrated into a mutually reinforcing pattern. It becomes, metaphorically speaking, a process in which managers strive to maintain parallel streams of business and I/S decisions over time through a continual series of re-alignments. Such a conceptualization of strategic alignment demands that we directly account for the role of managers in the process.

As a general rule, no manager would knowingly make a strategic decision that was not well integrated with the existing business strategy. However, because strategic decisions are made under conditions of ambiguity, managers cannot make perfect ex ante judgments about strategic alignment. Instead, managers become aware of alignment (or, more to the point, misalignment) retrospectively, when indicators of emerging problems and opportunities lead them to question whether their past decisions were as well aligned with strategy as they initially believed. Thus, because strategic alignment is a recurring issue to be managed rather than a problem to be solved or a decision to be made, and because it is an organizational phenomenon that is comprehended retrospectively rather than prospectively, we argue that it is appropriate to model I/S

strategic alignment as an *interpretive* or *sense-making* process [27].

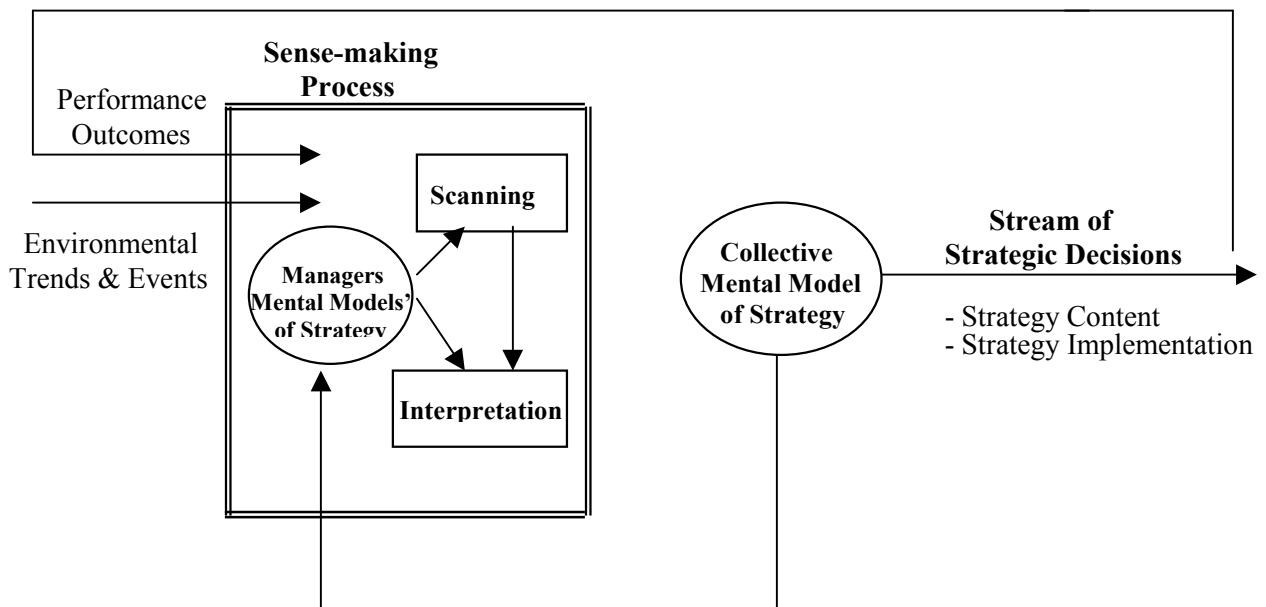
**Sense-making and Strategic Change**

Figure 1 presents a generic sense-making model describing how managers guide a stream of strategic decisions over time. The scanning sub-process, which involves searching the environment to identify issues and events that may impact the organization [7], activates the interpretation sub-process [9] in which managers attach meaning to strategic issues and draw out organizational implications [7]. Both scanning and interpretation activities are affected by the mental models of the manager involved [7] [9]. Strategic change – that is, decisions to make large-scale changes in strategy content and/or small-scale adjustments to the implementation of strategy – is preceded by changes in managers’ mental models about strategy [1]. For concerted change to take place, it is necessary that there be some degree of collectively shared interpretations among decision-makers [7]. To the extent that managers throughout the organization have consistent mental models about strategy, their separate decisions will form a well-integrated pattern in the stream of decisions [28]. However, given that managers come from a variety of socio-economic and educational backgrounds and, once in the organization, experience very different career paths,

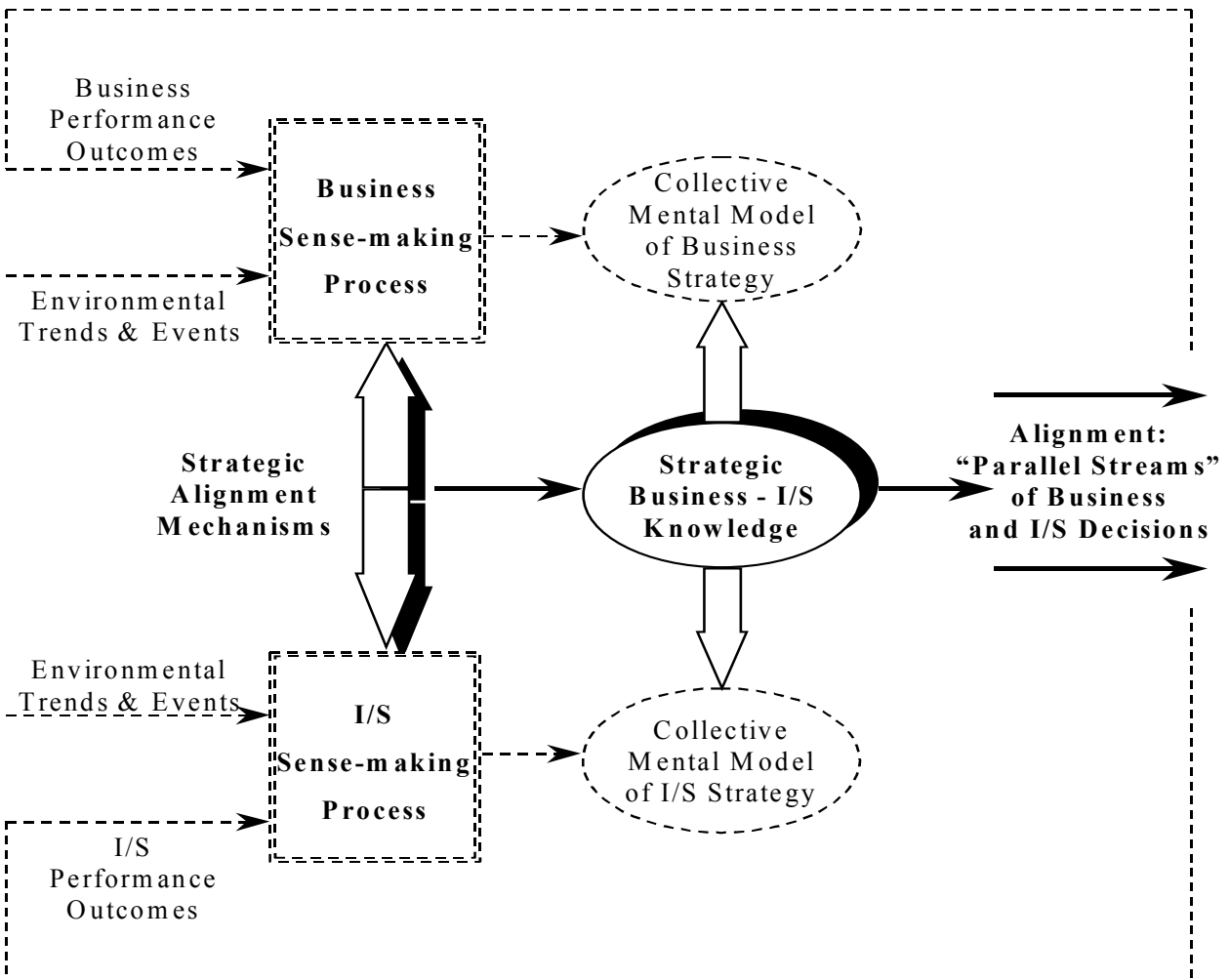
socialization activities, and operating contexts, it is inevitable that multiple interpretations of strategy will exist in an organization [24]. As a result, there is always some risk that individual managers will make strategic decisions that are inconsistent with the implementation plan or espoused objectives of the organization.

Through social interchange, decision-makers with differing interpretations of strategic issues can develop collectively shared interpretations [7]. Thus, involvement in sense-making activities can help managers become collectively aware of information concerning the possible need for strategic change, and can also help them build a collective interpretation of strategy and change. If the sense-making activities are ineffective at building shared understanding, managers will continue to hold different mental models of strategy, their discretionary strategic decisions are likely to be dis-integrated to some degree, the strategy will not be implemented as planned and will not produce the intended results, and the cycle will continue as managers will fail to detect, correctly interpret, and concertedly act upon these problems. Thus, the essential purpose of strategic sense-making activities is to help managers throughout the organization become “of one mind” regarding strategy, as this improves the odds that the large-scale changes in strategy content and small-scale adjustments in strategy implementation will be well-integrated and consistent with organizational objectives.

**FIGURE 1**  
**A Sense-making Model of Strategic Change**



**FIGURE 2**  
**Sense-making Model of**  
**Strategic Alignment Process**



### Sense-making and the Alignment of Strategies

We extend the sense-making model to help conceptualize the I/S strategic alignment process by considering business and I/S strategies as separate streams of decisions produced by distinct sense-making processes. For business and I/S strategies to be in alignment over time, indicators of the possible need to change business strategy must trigger interpretation activities in the I/S domain, and the same must be true of indicators of the need to change I/S strategy. As outlined in Figure 2, linkages between the separate business and I/S sense-making processes enable this continual process of coordinated strategic re-alignment.

We define *strategic alignment mechanisms* as the administrative arrangements that connect the sense-making activities in the business domain with those in the I/S domain, so that the strategic adjustments being considered in one domain account for those being considered in the other. These mechanisms are the channels through which information flows to shape the collective awareness and interpretation of misalignment by business and I/S managers, and it is within these channels that managers develop the shared understanding needed to coordinate adjustments to their respective strategies. We use the term *strategic business-I/S knowledge* to denote this blended knowledge about business and I/S strategies. Strategic business-I/S knowledge is related to the notion of “managerial IT knowledge [3],” but as it involves knowledge that relevant to strategic-level decisions and activities, it is more closely related to Reich and Benbasat’s [22] concept of “social dimension of linkage.” According to the model in Figure 2, strategic misalignments arise when sense-making about business strategy is not well connected to sense-making about I/S strategy, such that managers do not have a common awareness of the need for strategic change in one domain or the other or do not interpret the signals similarly, and so they do not respond to needed change in a coordinated fashion. On the other hand, as mental models converge through linked sense-making, business and I/S managers grow close to being “of one mind,” and their streams of decisions converge toward alignment.

### RESEARCH METHODS

The sense-making model outlined in Figure 2 was developed to provide a framework for conceptualizing strategic alignment issues. We initiated a pilot study to help us assess whether this sense-making perspective does indeed yield valuable insights into the managerial practice of strategic alignment. The data

gathered in this exploratory study were not intended to serve as an empirical test of the model in Figure 2. Rather, the data were meant to help formulate the basic conceptual categories and initial propositions that could guide future research efforts.

Our design for collecting and analyzing data about strategic alignment was based on Glaser and Strauss’ [11] guidelines for developing substantive grounded theory, in which multiple similar cases are examined to specify important theoretical categories and properties of phenomena. According to these guidelines, the entities of interest are identified and compared, categories are elaborated over time, new instances that might extend or disconfirm the emerging categories are actively solicited, and underlying uniformities in the data are synthesized into higher level concepts. Our operationalization of these procedures occurred in two stages. In the Development stage of the project, data about strategic alignment mechanisms were collected from a sample of practitioners via focus group methods. In the Refinement stage, a separate sample of practitioners was enlisted to help extend, refine, and corroborate the interim results from the Development stage. This two-stage approach enabled the progressive sharpening of categories, concepts, and propositions, and provided support for the generalizability of the research findings.

#### Development Stage

**Data Source.** Eight medium-sized organizations located in the western United States that had recently completed a large-scale I/S project accepted our invitation to participate in the Development stage of the study. Three firms in this sample are from the forest products industry, three are from the insurance industry, and two are government organizations. Although the scope of the recent I/S projects varied across the organizations – some involved the implementation of new enterprise-wide applications while others concerned applications within specific functional areas (e.g., customer resource management) – each project was considered a major strategic investment by top management. This sample selection criterion ensured that study participants would be able to anchor their responses on experiences that were recent and organizationally significant. As the objective of the study was to learn about both the business and I/S perspectives into strategic alignment, we sought top-level representatives of both perspectives from each organization. In five firms, both the CEO and CIO agreed to participate in the study; in the remaining three cases, the CIO and a vice-president within the same reporting

chain agreed to participate (two vice-presidents of Finance, one executive vice-president of operations).

**Data Collection.** We mailed surveys to the sixteen participating executives to gather background information about their organizations and strategic priorities. One month later, after surveys had been returned and analyzed, we conducted focus group interviews with the survey respondents to uncover information about the strategic alignment activities in their organizations. Focus group techniques are well suited to the development of grounded theory, as they can surface points of agreement and disagreement among participants who are directly involved with the phenomena under study and yet who also have different perspectives, experiences, and cognitive frames [20]. To facilitate open discussion, we conducted two focus group sessions and ensured that the membership of each group did not include an executive and CIO from the same organization. An external facilitator familiar with the overall objectives of the study but unaware its details led participants in both sessions through three related exercises. Each session lasted approximately four hours. Participant comments were recorded via written notes and audiotape.

One limitation of the group interview format is that group pressures toward conformity may yield greater similarity in the data than actually exists in the phenomena under study. To reduce the risk of false conformity, the data collection protocol did not impose categories or types of answers onto participants. Instead, open-ended prompts were used to ensure that initial written responses would be framed in participants' own words. In the first exercise, participants were asked "to generate a list of the mechanisms through which you learn or communicate about the strategic priorities of the business (asked of the CIOs) or of the I/S function (asked of business executives)." Participants wrote a descriptive label for each mechanism on a separate card and, when participants had finished, all cards were placed on a white-board that had been treated with adhesive spray. Participants were then asked "to generate list of the mechanisms through which you learn or communicate about the contributions that I/S makes (or potentially could make) to business strategy." At the conclusion of this part of the exercise, new cards (i.e., non-redundant mechanisms) were added to the "sticky board." The process was repeated once more "to generate a list of the mechanisms through which you learn or communicate about the organizational impacts (both problems and opportunities) of current I/S projects and operations." At several points during the exercise the comments of one participant inspired others to recall related mechanisms, and these new cards were added to the board.

In the second exercise, the facilitator helped participants create clusters of cards by positioning related mechanisms close together on the board. Card movements were suggested by participants (most often) and the facilitator, but no move was permitted until the mechanism's rationale for inclusion in a cluster was explained and the move ratified by participants. Mechanisms judged by participants to be redundant were removed from the board. This protocol reduced the risk of false conformity among participants, and also prevented the researchers from imposing pre-determined structures onto the data. In the final exercise, the facilitator led the group in a discussion about the differential effectiveness of the clusters of alignment mechanisms. The intent of this exercise was to elicit the organizational factors that participants believe enhance or impede strategic alignment in their organizations. Throughout the three exercises the facilitator repeatedly pressed participants to provide more detail, compare their experiences, raise questions, and identify inconsistencies, gaps, and overlaps in the accumulating data.

**Interim Analysis.** Participants in the first focus group session generated nine categories containing 36 alignment mechanisms, whereas the second session generated eight categories of 52 mechanisms. There was substantial overlap in the categories and individual mechanisms across the two lists, and in order to produce a more parsimonious data structure, we merged categories (both within and across the lists) that contained similar alignment mechanisms. To retain the original classification choices of participants during the merging process, participant-derived categories were subsumed into five higher-level categories but individual mechanisms were not re-categorized. Recorded comments made during the category-building exercise, in which the rationales for including alignment mechanisms in one category or another were debated by participants, helped us construct descriptive labels and integrative themes to characterize each category. According to Krueger's [15] continuum of qualitative data analysis, the development of the five-category framework of alignment mechanisms represents a summarization of respondent comments rather than an interpretation of that data. Other comments concerning enhancements and impediments to strategic alignment were analyzed to identify experiences, issues, and perceptions that were shared by multiple participants. The data were distilled into a smaller set of observations representing our interpretations [15] of the alignment problems and practices that were common to the organizations in our study.

## Refinement Stage

**Data Source.** Data for the Refinement stage of the project were collected from the attendees of two CIO Roundtable meetings held in separate metropolitan areas two months after the initial focus group interviews. CIO Roundtables are corporate-sponsored monthly meetings that bring together CIOs of medium to large-size organizations from a variety of industries to discuss common issues and listen to presentations on technical and managerial topics. Approximately 20 CIOs attended each Roundtable meeting.

**Data Collection.** The focus group interview method was used again in this stage. Both Roundtable sessions were led by one of the researchers, and the other researcher recorded participant comments. Each meeting lasted two hours and involved two exercises. In the first exercise, the objectives of the research project were explained and the five-category taxonomy of alignment mechanisms was presented using several representative alignment mechanisms to illustrate each category. Participants were asked whether the taxonomy “made sense” and whether any of the mechanisms presented should be re-categorized. Participants were then asked to list (on individual pieces of paper) the alignment mechanisms operating within their own organizations. The same three prompts employed in the focus groups of the Development stage were used again to guide respondents (e.g., “Through what mechanisms do you learn or communicate about the strategic priorities of your business?”). During the ensuing discussion, a number of new alignment mechanisms were described that had not been captured in the Development stage focus groups. For each new case, the researcher-facilitator asked participants to judge whether the alignment mechanism “should form its own new category or be added to an existing category.” The participants, as a group, decided upon the appropriate classification.

In the second exercise, the researcher-facilitator outlined the tentative propositions derived from the Development stage focus groups and illustrated each proposition with examples drawn from that earlier sample. Roundtable participants were asked to comment on the applicability, and inapplicability, of these observations for their own organizations. Disconfirming evidence was solicited by prompting participants “to identify counterexamples of the alignment practices,” and by explicitly seeking input from participants who “do not believe particular alignment problems are present in their organizations.”

**Analysis.** The new alignment mechanisms identified in the Roundtable meetings were added to the

original list of mechanisms from the earlier focus groups. During the review of the 5-category taxonomy, a few participants advocated for splitting off particular mechanisms to create sub-categories. However, the majority of participants were satisfied with the categorization scheme derived from the Development stage, and no one suggested re-categorizing a mechanism from one of the five categories to another. Also, although explicit efforts were made to solicit new mechanisms that did not fit within the five-category taxonomy, no new alignment category emerged. Overall, the data from the first exercise demonstrate the robustness of the 5-category taxonomy for classifying alignment mechanisms. We further rationalized the taxonomy by subsuming three related categories into a single larger type composed of three sub-types. The details of this three-category taxonomy of alignment mechanisms are presented Tables 1 and 2 and described in the Results and Discussion section.

Recorded comments from the second exercise were analyzed to determine whether the alignment problems and practices that were common to the organizations in the Development stage focus groups were also consistent with the experiences of Roundtable participants. The level of assent for the propositions was gauged by the number and tenor of comments either supporting or elaborating upon a particular problem or practice. The level of dissent was gauged by the number of participants proposing or concurring with counterexamples of alignment practices, and by the number of participants stating that the alignment problems are not present in their organizations. There was widespread assent that the alignment practices identified in the earlier sample were also operative in the Roundtable organizations, and no counterexamples were described. There was also broad agreement about the presence of the alignment problems within their organizations, although participants varied markedly in the extent to which they felt particular problems posed serious challenges for strategic alignment. Overall, the Roundtable data offered preliminary support for the generalizability of the observations beyond the original sample of organizations.

## RESULTS AND DISCUSSION

The findings from the pilot study provide preliminary answers to the three questions motivating this research: what are the different types of alignment mechanisms, how are these mechanisms used in practice, and what common problems inhibit their effectiveness?



**Types of Alignment Mechanisms**

Study participants identified three alignment channels through which information relevant to strategic change and potential misalignment is exchanged, interpreted, and transformed into strategic business-I/S

knowledge. Each channel involves linkages between the sense-making activities of business and those of I/S. Table 1 outlines the characteristics of each channel, and Table 2 presents a list of representative alignment mechanisms.

**TABLE 1**  
**Characteristics of Strategic Alignment Mechanisms**

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	Alignment Channel
	Objects of Linkage
	Mode of Linkage
	Purpose of Linkage
	Contact Linkage
<i>Documented statements of strategic intent of business and I/X</i>	
<i>Cross-referencing of business strategy statements in documents of IS/strategic intent, and vice versa</i>	
<i>Sense-giving: To direct or focus strategic sense-making by communicating a coordinated set of plans, decision guidelines, and performance targets</i>	
	Process Linkage
<i>Business and I/S strategic sense-making activities (where managers make sense of information signaling the need to change strategy)</i>	
<i>Cross participation of business managers in I/S strategic sense-making activities, and vice versa</i>	
<i>Sense-making: To promote strategic sense-making directly by facilitating discourse about strategic change and potential misalignment</i>	
	Context Linkage
<i>Managerial systems, programs, and socialization activities that can shape organizational norms and values</i>	
<i>Exposing business managers to knowledge and experiences relevant to I/S domain, and vice versa; creating shared experiences for these managers</i>	
<i>Sense-building: To expand capacity for strategic sense-making by building common norms, values, and knowledge-base</i>	

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**TABLE 2**  
**Examples of Strategic Alignment Mechanisms**

Alignment Channel	Representative Examples of Strategic Alignment Mechanisms
<b>Content Linkage</b>	<p>Cross-referencing of documented business and I/S strategy statements:                      Mission statements                      lists of goals, objectives, performance measures                      strategic plans                      action plans and budgets for business &amp; I/S projects</p>
<b>Process Linkage</b>	<p><u>I/S-exclusive Mechanisms:</u>                      CIO always attends bi-weekly Executive Committee meetings                      CIO receives minutes from Executive Committee meetings                      CIO is member of Corporate Strategic Planning Committee                      I/S managers present I/S strategic plan to Executive Committee                      CIO sometimes attends regional General Managers' planning meetings                      I/S managers provide technical assistance to Strategic Planning Committee                      CIO reads the business strategic plan                      CIO participates in capital budgeting process                      I/S managers preview business acquisition ideas</p> <hr/> <p><u>I/S-inclusive Mechanisms:</u>                      CEO chairs I/S Steering Committee                      Several executives periodically attend I/S Advisory Committee meetings                      Division general managers review I/S strategic plan                      IT hardware/software proposals reviewed by top executives                      Performance reviews of CIO and I/S function                      Executives attend some I/S project (and post-project) meetings                      Executives review I/S status reports                      Executives visit and review I/S facilities</p> <hr/> <p><u>Informal Mechanisms:</u>                      Division managers' "gripes &amp; kudos" about I/S to other executives                      Rumor mill, hall talk regarding business and I/S problems and opportunities                      1-on-1 meetings (formal &amp; informal) between I/S manager and business executive</p>
<b>Context Linkage</b>	<p>I/S career paths flow through business functional areas                      Business career paths include involvement with IT projects                      Executives &amp; CIO attend seminars, visit other companies                      CIO brings in consultants &amp; IT vendors for executive presentations                      I/S newsletter circulated to business executives                      CIO and executives share technology/business articles</p>

**Content Linkage.** Content Linkage involves efforts to coordinate the documented statements of business and I/S strategy such as mission statements, lists of goals and objectives, strategic plans, budgets, and corporate policies. Documented strategy statements represent the articulation of strategic intent in formats that can be easily communicated throughout the organization. Such statements influence the issues subordinate managers pay attention to, shape how they interpret these issues, and provide guidelines for making discretionary decisions. Thus, business and I/S strategies can be aligned, in part, by the cross-referencing of strategy statements within their respective descriptions of strategic intent. When the strategic intent of the business is clearly described within the documented statements of I/S strategy, I/S managers will be more likely to account for business strategy when making sense of I/S issues and evaluating I/S decision alternatives. Similarly, clear statements of I/S strategic intent within business strategy documents shape sense-making by business managers and affect their strategic choices. In this way, Content Linkage mechanisms serve a “sense-giving” purpose, as they direct or focus the sense-making efforts of managers throughout the organization.

The cross-referencing of strategy statements was common in the organizations we studied, although the degree of cross-referencing varied greatly. A high level of Content Linkage was demonstrated when: business strategy statements referenced I/S strategy statements *and* vice versa; the cross-referenced strategy statements were more detailed or comprehensive (particularly as they concerned the indicators of business and I/S performance); and the cross-referenced strategy statements were present in operating-level documents (e.g., the operating plans and budgets for particular business and I/S projects) as well as organization-level documents (e.g., the strategic plan for the business as a whole). In those organizations with no explicit cross-referencing of business and I/S strategy statements, managers still reviewed each other’s strategy documents, although they did so with varying degrees of vigilance.

**Context Linkage.** Context Linkage concerns efforts to coordinate the norms and values of the managers responsible for making strategic business and I/S decisions. When managers have similar norms and values regarding the business, its interactions with the external environment, and “the way things are done,” they are more likely to make decisions that combine to be well integrated over time. These norms and values shape, and are shaped by, the culture, symbols, and organizational knowledge that provide the context within which strategic planning and other sense-making activities take place. Hence, the systems, programs, and activities that

influence organizational norms and values – such as employee selection and retention systems, management development and training programs, career paths, and the organization’s formal and informal socialization activities – can also facilitate strategic alignment by exposing business and I/S managers to each other’s domain, giving them common experiences and background knowledge, and otherwise influencing their sense-making contexts in similar ways. Such mechanisms serve a “sense-building” purpose, as they expand the capacities of individual managers and make later sense-making activities (through both Content Linkages and Process Linkages) more effective.

The organizations we studied varied in the extent they used the Context Linkage mechanisms. A high level of Context Linkage was evident in organizations, for example, that have well established career paths for business executives that include I/S-intensive projects, or that rotate I/S managers through assignments within user departments. Other organizations with high Context Linkage made extensive use of I/S newsletters, management development programs, I/S-related courses, management skills seminars, and presentations by technology vendors as a means to build common ground between business and I/S managers. In those organizations with low Context Linkage, career paths of business and I/S managers progress in separate silos, and they report having few joint socialization experiences.

**Process Linkage.** Process Linkage promotes strategic alignment by directly linking the strategic sense-making of business and I/S. When business and I/S managers cross-participate in each others’ sense-making activities, they share strategic information relevant to their own domain, become aware of potential misalignment problems arising in the other domain, influence each others’ interpretation of information, blend these interpretations into a greater shared understanding of business and I/S strategies, and, ultimately, coordinate their efforts to resolve the misalignments. Process Linkages are similar to Context Linkages in that both involve the exposure of business and I/S managers to each other’s domain. In contrast to Context Linkages, Process Linkages are issue-oriented, attention-focusing mechanisms that serve to raise and answer questions about business and I/S priorities, strategic change, and potential misalignment. They promote alignment directly by facilitating joint sense-making about the causes and consequences of misalignment. Context Linkages, on the other hand, are attention-broadening mechanisms that do not address alignment issues directly. Instead, by exposing business and I/S managers to each other’s domain over time, Context Linkage mechanisms enable these managers to draw upon a wider range of common

experiences, relationships, and concepts in their later sense-making about strategic alignment.

We note three sub-types of alignment mechanisms in this channel, two consisting of formal administrative structures and activities and the other consisting of informal, interpersonal mechanisms. *I/S-exclusive* linkages are those formal mechanisms whose primary objective concerns managing the adjustments to business strategy content and implementation, such as in corporate strategic planning and capital budgeting systems, ad hoc capital investment decision processes, periodic budget reviews, project status reports, and the like. I/S manager involvement in these mechanisms promotes information sharing and learning across the business and I/S domains. *I/S-inclusive* linkages are formal mechanisms that include I/S strategic planning, I/S disaster recovery and security planning, I/S steering committees, I/S project scheduling, periodic reviews of I/S projects, and other activities in which potential adjustments to I/S strategy content and implementation are evaluated. Business manager involvement in I/S-inclusive mechanisms also promotes the building of shared understanding about strategy across the two domains. Finally, *Informal* linkages are other meeting points in which individual business and I/S managers come together to share information and make sense of strategic issues and potential misalignments. These mechanisms also include indirect and anecdotal information sources, such as the “rumor mill,” “hall talk,” and ad hoc comments by middle management users of information technology.

The degree of cross-participation in Process Linkage mechanisms varied widely in the organizations we studied. High Process Linkage was observed in organizations that support a broad bandwidth of interactions among managers, such as those that have a larger number of business and I/S managers involved in Process Linkage mechanisms, or that have managers who are involved more frequently (e.g., monthly versus quarterly strategic planning meetings), more deeply (e.g., a CIO serving as facilitator of the business strategic planning meetings versus one who does not attend, but who reads the minutes of the meetings), or with greater reciprocity (i.e., substantial two-way information sharing, discussion, and joint decision-making). Organizations with low Process Linkage are characterized by a narrow bandwidth of interactions among managers. For example, in these organizations few I/S managers (often only the CIO) participate in I/S-exclusive mechanisms, and even then not very assertively; similarly, business manager participation in I/S-inclusive mechanisms can also be characterized as passive.

### **Alignment Mechanisms in Practice**

Analysis of the data from the pilot study uncovered two general insights about the managerial practice of I/S strategic alignment.

**Strategic alignment requires a “system” of mechanisms.** Although every organization we studied had established alignment mechanisms in all three channels, different organizations emphasized different mechanisms, and no single mechanism (or channel) was universally considered to be most effective. Consequently, overarching prescriptions for maintaining strategic alignment that appear in the trade press, such as “the CIO must report directly to the CEO” or “the CIO must be intimately involved in the business strategic planning process,” are clearly misleading. Furthermore, our results indicate that there are substantial interdependencies among the alignment mechanisms, and that some mechanisms may complement or substitute for others. For example, because the CIO of one company in our study is positioned three levels below the Chief Financial Officer, he does not directly participate in executive committee meetings and so has limited opportunity to influence, or even learn about, the direction of business strategy. However, the CIO worked around this limitation by creating a temporary alignment mechanism within the same channel (he requested briefings by an attendee of the executive committee meetings), enhancing an existing alignment mechanism (he facilitates the I/S steering committee meetings so that executives will discuss business projects in more depth), and establishing a permanent new mechanism (he created a “future technology” committee that meets periodically to share information about potential strategic I/S applications). Similarly, the CEO of another organization we studied complained that he rarely hears any “bad news” about I/S through the formal Process Linkage mechanisms, and so he developed a new informal mechanism, personal relationships with a few key middle management users of I/S services, to learn about the status of particular I/S projects and issues. Expanding the Informal Process Linkages was the most common short-term response to misalignment noted by participants. Executives and CIOs both report that when they feel anxious regarding potential misalignments they create opportunities to connect with each other in informal, one-on-one interactions to begin making sense of the information. These and other comments from suggest that managing I/S strategic alignment demands a complex web of interdependent alignment mechanisms that combine, as a system, to help managers become aware of and respond to emerging strategic misalignments.

The results noted above are consistent with an earlier study showing that organizations tend to use pre-existing control mechanisms for managing I/S projects, but will augment these mechanisms when additional integration is deemed necessary or when control problems are discovered [14]. The findings also support the observation that although executives use an array of control mechanisms, they tend to focus their efforts where the organization is most vulnerable and learning needs are greatest [24]. Such a system of intertwined organizational processes and personal relationships, and overlapping interchanges of information among business and I/S executives, generates enriched organizational knowledge structures [3] that facilitate the organization's ability to acquire, assimilate, and exploit new technology [21].

**“Style” of manager involvement appears crucial for Process Linkage.** Although the organizations we studied employ many of the same Process Linkages, the nature and extent of managerial involvement within the mechanisms varied greatly from one organization to the next. For example, with respect to I/S manager involvement in business strategic planning, one CIO serves as facilitator of the planning meetings in her organization, another contributes technical analysis but does not otherwise participate, several others participate regularly in planning meetings but have varying degrees of power to shape the discussion and eventual decisions, and a few CIOs are connected to business strategic planning only through reading the strategic plan (document) itself. Comments from participants support the notion that it is not the presence of particular Process Linkages in an organization but the style of involvement within the mechanisms that promotes or impedes the creation of shared understanding about strategy. Several panelists noted that this is particularly true of the management systems that track the on-going performance of I/S projects and operations. Even when these mechanisms are present, CIOs complained that business executives rarely become deeply and interactively involved in interpreting the performance information.

As much of an organization's ability to create and apply relevant knowledge arises from the structure of its internal communication patterns [3], it makes sense that the style of involvement of business and I/S managers should influence the level of strategic business-I/S knowledge. The observations above suggest that Process Linkages that merely bring managers together have limited value. Instead, effective strategic alignment requires mechanisms that build a supportive climate for reciprocal information sharing and joint learning, such that I/S-knowledge and business-knowledge become blended within the minds of individual managers [3] [22].

### Common Alignment Problems

Study participants also identified many weaknesses in their alignment mechanisms that inhibit the collective awareness and interpretation of misalignment. We present a sample of these in Table 3.

**Problems with building collective awareness.** Many participants in our study noted that the inherent difficulty of appraising I/S performance could frustrate strategic re-alignment. In many organizations, I/S performance measures are not trusted to reflect the actual contributions of I/S to the organization. Because performance comparisons between I/S and other organizational units are often not considered meaningful, business executives may not form consistent or realistic impressions about how well I/S is performing. Top management is motivated to pay attention to issues that have a higher payoff [9], and may not become aware of potential I/S problems and opportunities if payoffs from I/S are unclear. Thus, loose Content Linkage – and in particular, the lack of integration between business and I/S performance measures – may lead top management to overlook emerging problems and opportunities in I/S. The importance of negotiating a common understanding of, and trust in, I/S performance measures has been noted by several authors [13] [16].

Weaknesses in Context Linkages may also inhibit the collective awareness of the need for strategic re-alignment. In general, managers are more likely to pay attention to issues that they perceive are related to their domain of expertise and have difficulty becoming aware of issues arising in other domains [10]. Organizational investments in Context Linkages can help managers overcome this bias by creating opportunities to form relationships with managers in other domains; in so doing, managers are also developing additional formal and informal communication channels with which to become aware of strategic issues emerging from these other domains. Participant comments suggest that many organizations are not investing sufficiently in Context Linkages, in that many CIOs feel they have not been able to establish a rich network of connections for communicating with business managers about emerging business and I/S problems and opportunities.

Recent research verifies the value of management systems that facilitate frequent and rigorous reviews and feedback of I/S implementation issues [21], and yet the data from our study suggest many firms simply do not have these kinds of Process Linkages in place. CIO panelists complained that even when formal

**TABLE 3**  
**Illustrative Strategic Alignment Problems**

Sense-making Activity Affected by Problem	Locus of Alignment Problem		
	Content Linkage	Process Linkage	Context Linkage
Scanning	<p><i><u>Linkage Problem:</u> I/S performance metrics not meaningfully linked to business metrics</i></p> <p><i><u>Implication:</u> business executives tend to overlook indicators of I/S problems and opportunities</i></p>	<p><i><u>Linkage Problem:</u> Formal reviews of I/S projects by business managers are lacking or not taken seriously</i></p> <p><i><u>Implication:</u> business managers often do not hear about I/S implementation problems directly, and can miss early symptoms of misalignment</i></p>	<p><i><u>Linkage Problem:</u> business and I/S career paths remain within their respective “silos”</i></p> <p><i><u>Implications:</u> business managers inclined to focus on problems and opportunities arising from their own (non-I/S) domains of expertise; both business and I/S managers lack rich communication network for hearing about problems &amp; opportunities in each others’ domain</i></p>
Interpretation	<p><i><u>Linkage Problem:</u> I/S plan too tightly linked to business strategic plan</i></p> <p><i><u>Implication:</u> I/S managers “filter out” potentially valuable I/S project ideas that do not quite fit before discussing them with business managers</i></p>	<p><i><u>Linkage Problem:</u> excessive formality of alignment mechanisms</i></p> <p><i><u>Implication:</u> interchange between business and I/S managers becomes one-way channel for communicating strategic intent rather than two-way channel for learning about strategy and I/S</i></p>	<p><i><u>Linkage Problem:</u> insufficient I/S background by business managers and insufficient business background by I/S managers</i></p> <p><i><u>Implication:</u> I/S managers confront “credibility gap” with business managers and feel they lack the knowledge and skills necessary to build support of I/S initiative</i></p>

systems exist to track and report the performance of the I/S function and particular I/S projects, business managers often remain detached from the systems and learn about I/S implementation issues only by glancing at periodic status reports. The lack of face-to-face discussion of I/S implementation problems and opportunities constrains the development of collective awareness, and may blind business managers to the implementation problems that are often symptoms of deepening strategic misalignment.

**Problems with building collective interpretation.** Weaknesses in Content, Context, and Process Linkages may hinder the collective interpretation of signals indicating the need for strategic re-alignment. Loose Content Linkage, in the form of weak integration between business and I/S performance metrics, again plays a contributing role. In the competition for top management's attention and resources, some CIOs feel I/S loses to other organizational units that are better able to articulate the costs and benefits of their proposals using well understood and trusted performance metrics, such that the collective interpretation of strategic issues is typically slanted in favor of these other units. On the other hand, a few CIO participants complained that the Content Linkages in their organization were, in some ways, integrated too tightly, in that they felt constrained from advocating for new I/S applications that did not quite fit the espoused business strategy even though the applications might have strategic merit. In these cases, tight Content Linkage may lead managers in one domain to "filter-out" strategic issues from consideration *before* collective interpretations can form.

Insufficient investment in Context Linkages also weakens an organization's ability to build shared interpretations. When top managers have had little exposure to I/S during their careers, they are likely to feel less competent in dealing with I/S issues, and so may be under-confident of their ability to provide guidance to I/S [8] and unreceptive to CIO attempts to advance the strategic role of I/S in the organization [16]. As a result, efforts to resolve strategic misalignments may fail because the limited I/S backgrounds of executives leave them unprepared to learn about I/S problems and opportunities. Indeed, several CIO participants noted that the executives in their organizations who are the least knowledgeable about I/S tend to be the most resistant to I/S proposals and recommendations. On the other hand, CIOs also remarked that limitations in their own backgrounds frustrate strategic alignment. They believe they confront a "credibility gap" with business managers [16], and perceive themselves to be less knowledgeable about the business and less adept at political skills than their non-I/S peers, characteristics that make it more

difficult for them to build organizational support for I/S initiatives.

We noted earlier that insufficient business manager involvement in Process Linkages could lead to a lack of collective awareness about potential misalignments. Several participants noted that *excessive* involvement by business managers could also inhibit sense-making. Some CIOs felt that because business executives dominated strategy discussions in their organization, I/S issues and opportunities rarely received an adequate hearing and so executives could not develop a deep understanding about the potential strategic contributions of I/S. The formality of Process Linkage was viewed as a contributing factor. Some CIOs complained that the "parade of presentations" style that characterizes their organizations' business strategic planning process makes it a poor forum for communicating up to top management about the strategic role and contribution of I/S. Similar complaints were made of other Process Linkages – such as I/S steering committees, budget meetings, and capital investment decision processes – that when they are highly structured, detailed, and analytical they become less effective channels for information-sharing and learning about strategy and potential misalignments. As Beath [2] notes, I/S management processes that become bureaucratic can constrain the learning and experimentation necessary to assimilate I/S more deeply into the organization. Process Linkages are most effective when they function as two-way channels for joint sense-making and learning rather than one-way channels for communicating strategic intent *down* to I/S [13] [22].

## MANAGERIAL IMPLICATIONS

The results of our study give managers a framework for understanding and diagnosing the sources of misalignment in their organizations. The three scenarios described in the introduction provide useful illustrations. The situation confronting Company A, in which the I/S strategy appears anchored to an earlier business strategy, suggests that its I/S managers have not developed a deep understanding of the new strategic priorities of the business. One source of this knowledge gap in may be its loose Process Linkages (particularly I/S-exclusive mechanisms) that limit the opportunities of I/S managers to view the increased priority for customer service "in action," as when I/S managers are only infrequent participants in business strategic planning and capital budgeting processes, and when the CIO has little direct involvement with the strategic discussions within the Executive Committee meetings. As a result, Company

A's I/S managers do not fully appreciate the importance of the next-day delivery and EDI initiatives, and so fail to recruit or develop sufficient technical resources to strongly support these initiatives. Loose Content Linkages may be a contributing source of this misalignment. The integration of business and I/S strategy documents could have called attention to the knowledge gap. Without this integration, Company A's I/S managers may proceed with I/S strategic planning under the assumption that their previously developed technology investment schedules and staffing plans are still appropriate; because Company A's business strategic plans do not cross-reference the I/S plans, its business executives may remain unaware of this false assumption.

Company B's failure to capitalize on its growing I/S capabilities suggests that its business executives have not developed sufficient understanding of the potential contributions I/S can make to business strategy. This symptom points to potential weaknesses within the Process Linkages (I/S-inclusive mechanisms), as when executive involvement in I/S steering committees and I/S planning processes has become sporadic and passive. Shallow involvement in these mechanisms makes it difficult for Company B's executives to comprehend "network application development capabilities" in business terms, and so they may become resistant to I/S project proposals that try to leverage these capabilities. Loose Context Linkages may also contribute to this alignment problem. Business executives' lack of exposure to I/S throughout their careers in Company B might underlie their inability to make business sense of the growing technical capabilities of the I/S function. Similarly, the lack of I/S manager exposure to the business domain means that they might not develop the interpersonal network, credibility, and social influence skills needed to overcome executive resistance to innovative I/S project ideas.

Company C's recent "strategic drift" suggests that its business and I/S executives do not yet have a shared understanding of the dynamic fit between evolving business priorities and the I/S resources allocated to support them. Company C may be drifting out of alignment because of tight Content Linkages in the form of performance metrics that are still focusing I/S resources and attention onto service improvements rather than on supporting the company's new growth strategy. Another source of strategic drift may be loose Process Linkages that are devoted to reviewing the status of I/S projects. If Company C's business managers are not seriously involved in these mechanisms, early signals of inadequate resources and missed deadlines for the I/S projects that support the growth initiatives will be slow to reach top management. In this case, the lack of collective

awareness about a minor misalignment could lead to delayed decisions about reallocating I/S resources, such that the misalignment grows over time.

The results of our study also provide a basis from which to examine the adequacy of an organization's strategic alignment system. The key issue to address at the outset of such an audit is not *whether* managers believe that business and I/S strategies are well aligned but *how* managers come to that judgment. That is, the "alignment audit" should focus on describing the details of the organization's strategic alignment architecture: the information sources, sense-making activities, and alignment mechanisms that link the two sense-making processes together. The strategic alignment taxonomy and examples outlined in Tables 1 & 2 can be used to help gather and organize this data. Once a comprehensive set of alignment mechanisms has been described, the adequacy of the overall alignment system could be assessed. Each of the three alignment channels can be evaluated with respect to how well it achieves its purpose (from Table 1) and avoids common alignment problems (from Table 3). For example, the various mechanisms that comprise the Process Linkage channel can be assessed in terms of how well they function, as a system, to facilitate discourse among business and I/S managers regarding the nature and effects of strategic change and potential misalignments, and whether the interchanges between business and I/S managers have sufficient frequency, breadth of involvement, and informality to allow shared learning to occur.

## CONCLUSION

The central purpose of this research was to learn more about how organizations try to manage I/S strategic alignment over time. We first outlined a conceptual model describing the strategic alignment process in terms of administrative arrangements that link strategic sense-making in the business and I/S domains (Figure 2). We then gathered data from business and I/S executives to develop a taxonomy of alignment mechanisms (Tables 1 & 2), and to identify common alignment practices and problems (Table 3). The results of this research suggest that the sense-making model presented here offers a promising framework for studying I/S strategic alignment. The model not only helped organize and interpret the data gathered in the pilot study, comments from participating executives and CIOs affirmed that the model is consistent with how they think about strategic alignment. We believe three features of the model would make it particularly useful in future research efforts.

First, the model describes strategic alignment in dynamic terms, as a continual series of re-alignment



activities. Thus, the model will be valuable in exploring how strategic alignment unfolds over time, and the causes and consequences of misalignment. Second, the model is behaviorally oriented, and grounds explanations of the strategic alignment process in terms of the cognitions and purposeful behaviors of managers. Because managers are not immediately aware that their current decisions are poorly aligned with strategy, strategic alignment is judged only retrospectively. By modeling strategic alignment as a sense-making process, researchers could study how managerial actions influence and are influenced by their perceptions of strategic alignment. In particular, a sense-making model provides a means of discussing strategic alignment failures in terms of the behavioral and organizational factors that promote or impede the collective awareness and interpretation of misalignment. This line of research could yield results that are of more immediate practical significance to business and I/S managers. Third, the model is broadly inclusive of many types of alignment mechanisms, whereas earlier studies tended to focus on individual mechanisms. This richer characterization of the forms of interchange between business and I/S managers will enable future empirical research to discriminate between the alignment efforts of different organizations, and to eventually identify the most effective configurations of alignment activities.

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#### AUTHORS' BIOGRAPHIES

*Professor Mark K. Fiegenger is an assistant professor of management at the University of Washington, Tacoma. He received his Ph.D. from the University of Pennsylvania. His research interests concern issues of corporate governance (in particular, the governance of small firms), strategic control, and the strategic management of information technology. Dr. Fiegenger has published in journals such as Entrepreneurship Theory & Practice, Entrepreneurship & Regional Development, the Journal of Small Business Management, and the Journal of Systems Management.*

*Professor James R. Coakley is an associate professor in the College of Business at Oregon State University. He received his PhD in Accounting Information Systems from the University of Utah in 1982. His research interests include strategic alignment of IT infrastructure, applications of artificial neural networks, and the use of information technology to teach information technology. Dr. Coakley has published in journals such as Expert Systems with Applications, International Journal of Intelligent Systems in Accounting, Finance and Management, Journal of Management Education, Journal of Systems Management, Journal of Informatics Education and Research, and Management Accounting.*

