Strategic alignment: Leveraging information technology for transforming organizations

by J. C. Henderson
N. Venkatraman

It is clear that even though information technology (I/T) has evolved from its traditional orientation of administrative support toward a more strategic role within an organization, there is still a glaring lack of fundamental frameworks within which to understand the potential of I/T for tomorrow's organizations. In this paper, we develop a model for conceptualizing and directing the emerging area of strategic management of information technology. This model, termed the Strategic Alignment Model, *is defined in terms of four fundamental domains of strategic choice: business strategy, information technology strategy, organizational infrastructure and processes, and information technology infrastructure and processes—each with its own underlying dimensions. We illustrate the power of this model in terms of two fundamental characteristics of strategic management: strategic fit (the interrelationships between external and internal components) and functional integration (integration between business and functional domains). More specifically, we derive four perspectives of alignment with specific implications for guiding management practice in this important area.*

It is perhaps a truism that the role and impact of information technology (I/T) on today's organizations has significantly changed over the last decade. Across a wide spectrum of markets and countries, I/T is transcending its traditional "back office" role and is evolving toward a "strategic"

role with the potential not only to support chosen business strategies, but also to shape new business strategies.[1-4] Yet, there is increasing concern that the anticipated value of the investment in I/T is not being achieved.[5] How do we reconcile the dramatic increase in the role of I/T in organizations and markets with the evidence of minimal productivity gains at an aggregate level of the economy?

We argue that the inability to realize value from I/T investments is, in part, due to the lack of *alignment* between the business and I/T strategies of organizations. We view strategy as involving both *formulation* (decisions pertaining to competitive, product-market choices) and *implementation* (choices that pertain to the structure and capabilities of the firm to execute its product-market choices). Our concept of strategic alignment is based on two fundamental assumptions: One, economic performance is directly related to the ability of management to create a *strategic fit* between the position of an organization in the com-

petitive product-market arena and the design of an appropriate administrative structure to support its execution. This assumption is consistent with the generally accepted axiom that strategic choices in the external and internal domains should be consistent.[6,7] Two, we contend that this strategic fit is inherently dynamic. The choices made by one business enterprise, or firm (if fundamentally strategic), will over time evoke imitative actions, which necessitate subsequent responses. Thus, strategic alignment is not an event but a process of continuous adaptation and change.

In this context, a critical lever for attaining this dynamic capability is not a specific set of sophisticated technological functionality but the organizational capabilities to leverage technology to differentiate its operations from competitors. In other words, no single I/T application—however sophisticated and state of the art it may be—could deliver a sustained competitive advantage. Rather, advantage is obtained through the capability of an organization to exploit I/T functionality on a continuous basis. This requires a fundamental change in managerial thinking about the role of I/T in organizational transformation, as well as an understanding of the critical components of I/T strategy and its role in supporting and shaping business strategy decisions.

Although there may be some consensus on the changing role of I/T within organizations, managers are still confronted with basic questions such as:

- What are the implications of I/T in my business operations? Today? In the future?
- What are the alternative perspectives for leveraging information technology capabilities for business operations?
- Is the locus of I/T competence "inside" or "outside" the operation?
- What is the executive role of senior management for leveraging I/T capabilities?
- How should the I/T function be organized, and what is the role of I/T outsourcing?
- What are the appropriate criteria for assessing I/T-based benefits?

We attempt to answer these and related questions by developing a model that defines the range of strategic choices facing managers and by exploring how they interrelate. As a prelude to the development of such a model, let us consider how organizations are leveraging I/T capabilities to shape and support their business strategies through the following four examples:

- Eastman Kodak Company and IBM announced an "unusual agreement under which IBM will take over the work done by four data centers, and 300 Kodak workers will become IBM employees" (*Wall Street Journal*, July 26, 1989). Kodak expects to cut their operating costs by as much as 50 percent. In addition, Kodak turned over the management of its telecommunications network to Digital Equipment Corp. and the maintenance of its personal computers to Computerland Corp.
- Baxter Healthcare Corp. has launched a new business program, ValueLink**, whereby it takes over the materials management function of its customers—hospitals on a partnership basis with stringent performance clauses; the critical business competence for offering this program is rooted in their superior information processing capabilities derived from their now-famous Analytic System/Automated Purchasing (ASAP) information systems.
- Since the advent of electronic filing of individual income taxes in the United States, many tax-return preparers (for example, H & R Block, Inc.) have created new electronic linkages with retail financial institutions that enable interested taxpayers, for a fee, to receive refunds at the time of electronically filing their return. Electronic connection between the filers and the Internal Revenue Service, combined with superior capability to check for errors, has become an important competency in this fast-changing marketplace.
- Procter & Gamble Co. and Wal-Mart Stores, Inc., have built upon new, integrated information systems to redesign key business processes that affect their ability to manage the movement of products through their North American distribution channels. As a result, both firms achieve significant improvements in operating costs and, more importantly, increased ability to respond quickly to local market conditions and requirements.

These examples highlight different facets of aligning I/T strategy and business strategy. In the following sections, we briefly introduce the building blocks of our proposed Strategic Alignment Model.

Strategic alignment: The emerging concept

Our concept of strategic alignment is based on two building blocks: *strategic fit* and *functional integration*. The former recognizes the need for any strategy to address both external and internal domains. The *external domain* is the business

---

I/T strategy should be articulated in terms of an external domain and an internal domain.

---

arena in which the firm competes and is concerned with decisions such as product-market offering and the distinctive strategy attributes that differentiate the firm from its competitors, as well as the range of "make-versus-buy" decisions, including partnerships and alliances. In contrast, the *internal domain* is concerned with choices pertaining to the logic of the administrative structure (functional or divisional or matrix organization) and the specific rationale for the design and redesign of critical business processes (product delivery, product development, customer service, total quality), as well as the acquisition and development of the human resource skills necessary for achieving the required organizational competencies.

Within the business domain, the fit between external positioning and internal arrangement has been argued to be critical for maximizing economic performance.[8] We adopt this logic to argue that the fit between external positioning and internal arrangement is equally relevant within the I/T domain.[1,9] More specifically, we contend that I/T strategy should be articulated in terms of an external domain—how the firm is positioned in the I/T marketplace—and an internal domain—how the I/S (information systems) infrastructure should be configured and managed. However, our research suggests that managers are more often comfortable with their capability to understand positioning choices in the business marketplace (where their products are sold) than with their understanding of how to be strategically positioned in the I/T marketplace (where they obtain

critical technological functionality that supports and shapes their business strategies). This is partly due to the fact that strategy—as a management concept—has historically been applied to the output market rather than input markets and that I/S strategy has often been viewed as a functional, internal response to the business strategy.

Thus, we propose that the position of the organization in the I/T marketplace involves three sets of choices:

1. Information technology scope—those specific information technologies (for example, electronic imaging, local- and wide-area networks, expert systems, and robotics) that support current business strategy initiatives or could shape new business strategy initiatives for the firm. This is analogous to business scope, which deals with choices pertaining to product-market offerings in the output market.
2. Systemic competencies—those attributes of I/T strategy (for example, system reliability, cost-performance levels, interconnectivity, flexibility) that could contribute positively to the creation of new business strategies or better support of existing business strategy. This is analogous to the concept of business distinctive competencies, which deal with those attributes of strategy (pricing, quality, value-added service, superior distribution channels) that contribute to a distinctive, comparative advantage to a firm over its competitors.
3. I/T governance—selection and use of mechanisms (for example, joint ventures with vendors, strategic alliances, joint research and development for new I/T capabilities) for obtaining the required I/T competencies. This is analogous to business governance, which involves make-versus-buy choices in business strategy. Such choices cover a complex array of interfirm relationships such as strategic alliances, joint ventures, marketing exchange, and technology licensing.

In a similar vein, the internal I/S domain must address at least three components, namely:

1. I/S architecture—choices that define the portfolio of applications, the configuration of hardware, software, and communication, and the data architecture that collectively define the technical infrastructure. This is analogous to the choices within the internal business

strategy arena to articulate the administrative structure of the firm dealing with roles, responsibilities, and authority structures.

2. I/S processes—choices that define the work processes central to the operations of the I/S infrastructure such as systems development, maintenance, and monitoring and control systems. This is analogous to the need for designing the business processes that support and shape the ability of the firm to execute business strategies.

3. I/S skills—choices pertaining to the acquisition, training, and development of the knowledge and capabilities of the individuals required to effectively manage and operate the I/S infrastructure within the organization. This is analogous to the skills required within the business domain to execute a given strategy.

Why is the distinction important? Traditionally, managers think of I/T strategy in terms of the latter three components that reflect an internal orientation. It is understandable, since the historical view is that I/T is a support function not essential to the business of the firm. In the words of one frustrated manager, "I/T in our organization is viewed as the technical core of the MIS [management information systems] function. The widespread feeling is that it has very little to do with our business strategy. Unfortunately, we could not be farther from the truth." This statement is applicable to those executives who view I/T as a "cost of doing business."

As I/T emerges as a critical enabler of business transformation with capabilities to deliver firm-level advantages, it is imperative that firms also pay attention to the three external components of I/T strategy. Hence, we argue that I/T strategy should be elevated from its traditional internal focus to address external issues of how well the firm is positioned in the fast-changing I/T marketplace.

Consider the example of McGraw-Hill, Inc.'s custom publishing offering, Primis**, in the textbook marketplace. Primis reflects a strategy of offering custom textbooks as an alternative to standard textbooks via its sophisticated electronic imaging technology infrastructure (a three-way joint venture with Eastman Kodak and R. R. Donnelley & Sons Co.). In this business strategy, McGraw-Hill determines the needs of an individual instructor and, from a set of modules, con-

structs or assembles a custom textbook that satisfies the market need. The I/T strategy for this initiative must address and define a critical I/T scope (electronic imaging technology), systemic competence (superior level of clarity of imaging to guarantee high-quality printing and flexible binding capability), as well as I/T governance (joint ventures and long-term agreements for obtaining the requisite competencies). Choices in these three areas determine the position of McGraw-Hill in the I/T and business marketplaces and have the potential to both shape and support the business strategy. Specifically, these choices can be directly related to choices pertaining to business scope and business competencies. More importantly, the technology attributes play a very important role in shaping these new business strategy initiatives. Such a view of I/T strategy has a clear external positioning focus that is to be distinguished from its internal I/S infrastructure.

Need to align external and internal domains of I/T. Our call for articulating I/T strategy in terms of an external domain does not in any way imply that the internal domain is unimportant or secondary. Indeed, our field research over the last few years clearly indicates that the inadequate fit between external and internal domains of I/T is a major reason for failure to derive benefits from I/T investments. One has only to scan the current business periodicals to recognize the possibility of an I/T strategy failing due to the poor supporting I/S infrastructure. A vivid example is provided by Citibank N.A.'s strategy for point-of-sale (POS) information services. It launched its POS Information Services** in 1985 with the explicit idea of linking store purchase with electronic couponing, payment, and frequent-shopper points, as well as the electronic capture of important information on purchase patterns. Although the general idea of combining information and financial transactions is still considered worthwhile, Citibank has reportedly faced several significant technical problems in the implementation of the concept that have resulted in its inability to establish a clear leadership position. Several similar initiatives undertaken by competitors, although smaller in scale, are reportedly doing well, and still others are attempting to establish an important competency in this arena.

Need to integrate business and I/T domains. The second dimension of the Strategic Alignment Model is functional integration. The need to in-

Figure 1 Strategic Alignment Model
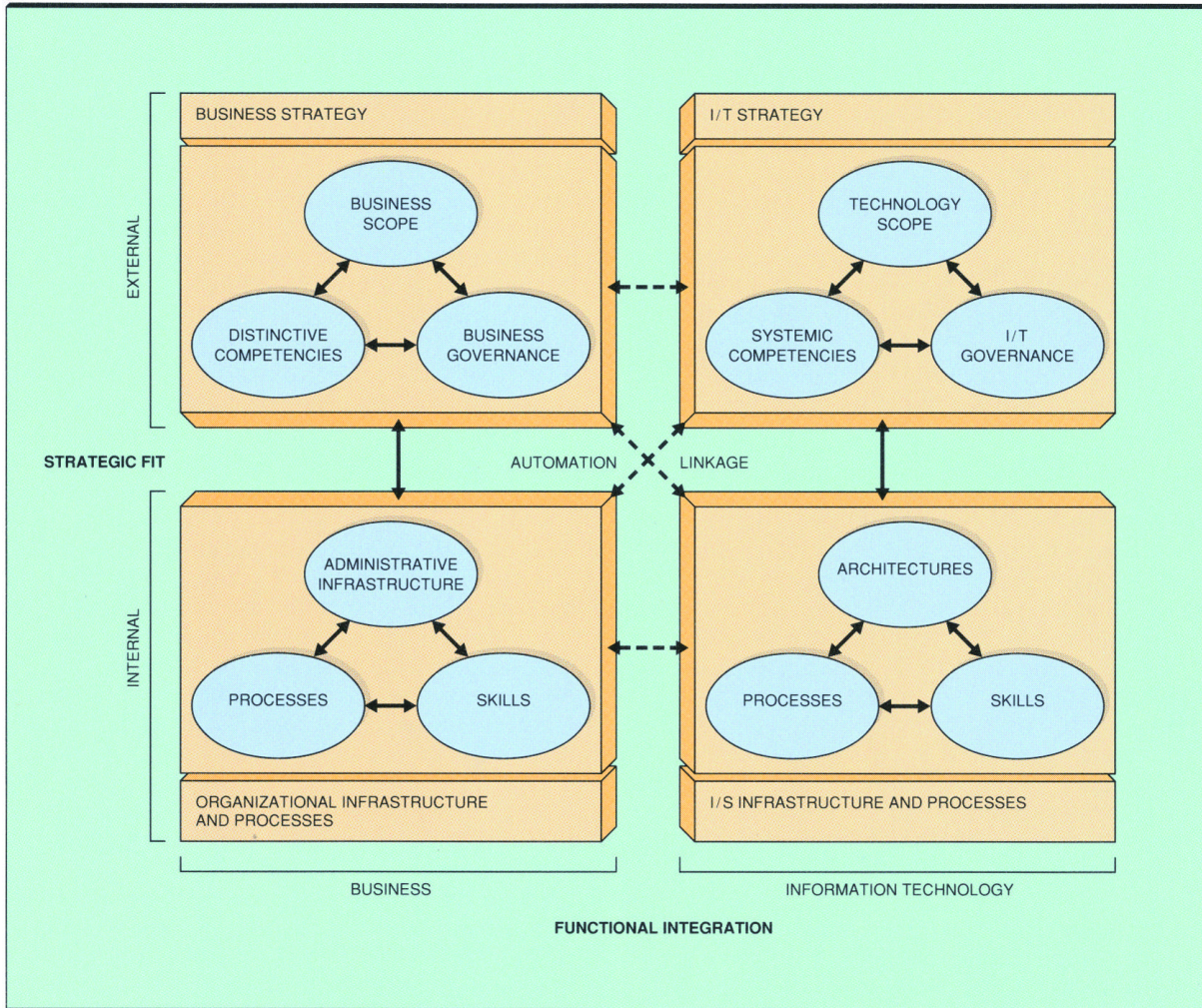
tegrate the I/T strategy and the business strategy has long been advocated by both researchers and practitioners. [10-12] This dimension specifically considers how choices made in the I/T domain impact (enhance or threaten) those made in the business domain and vice versa. However, much of current research has focused only on issues of integrating the internal I/S strategies (I/S infrastructure and processes) with internal organizational requirements as a response to business strategies. [13]

The Strategic Alignment Model (see Figure 1) identifies the need to specify two types of inte-

gration between business and I/T domains. The first, termed *strategic integration*, is the link between business strategy and I/T strategy reflecting the external components. More specifically, it deals with the capability of I/T functionality to both shape and support business strategy. This capability is particularly important as I/T has emerged as an important source of strategic advantage to firms. The second type, termed *operational integration*, deals with the corresponding internal domains, namely, the link between organizational infrastructure and processes and I/S infrastructure and processes. This type highlights the criticality of ensuring internal coherence be-

tween the organizational requirements and expectations and the delivery capability within the I/S function.

The logic of strategic alignment. A third premise of the Strategic Alignment Model (see Figure 1) is that effective management of I/T requires a balance among the choices made across all four domains. The question, then, is how do we conceptualize and achieve this type of alignment?

The simplest approach calls for considering all combinations of any two domains, a bivariate-fit perspective. If, for instance, the organizational and I/S infrastructures can be reconfigured easily, then a strategic perspective that focused only on strategic integration, bivariate fit between business and I/T strategies, could suffice. That is, if the firm could easily adapt their internal process (both business and I/T) to support any possible market positioning strategy, the executives could delegate this issue and spend their time understanding only the dynamics of markets. Unfortunately, there exists a significant possibility that internal inconsistencies (mutually conflicting directions) will occur. For instance, a bivariate perspective that considered only external issues (business and I/T strategies without any regard for the internal, organizational domains) could seriously underestimate the difficulty (risks) of redesigning key business processes. Alternatively, a bivariate fit that considered issues of business and I/T strategic fit separately has been argued to be dysfunctional. [11,12,14]

In contrast, the Strategic Alignment Model calls for the recognition of multivariate relationships, or more precisely, cross-domain relationships. Four types of cross-domain relationships are discussed in the next section.

Four dominant alignment perspectives

Business strategy as the driver. The first two cross-domain relationships given here arise when business strategy serves as the driving force.

Perspective One: Strategy execution. As depicted in Figure 2, this perspective is anchored on the notion that a business strategy has been articulated and is the driver of both organizational design choices and the design of I/S infrastructure.

**Figure 2 Strategy execution alignment perspective**
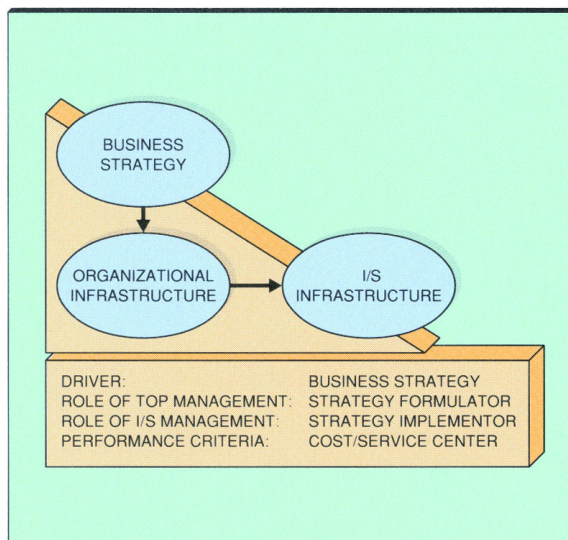
This alignment perspective is, perhaps, the most common and widely understood perspective as it corresponds to the classic, hierarchical view of strategic management. Thus, it is not surprising that several different analytical methodologies are available to make this perspective operational: critical success factors, [15] business systems planning, [16] and enterprise modeling. [17]

It is important to identify the specific role of management to make this perspective succeed. Specifically, we contend that top management should play the role of the *strategy formulator* to articulate the logic and choices pertaining to business strategy, whereas the role of the I/S manager should be that of the *strategy implementor*, one who efficiently and effectively designs and implements the required I/S infrastructure and processes that support the chosen business strategy. The performance criteria for assessing the I/S function within this perspective are based on financial parameters reflecting a cost center focus.

Perspective Two: Technology transformation. As shown in Figure 3, this alignment perspective involves the assessment of implementing the chosen business strategy through appropriate I/T strategy and the articulation of the required I/S infrastructure and processes. In contrast to the strategy execution logic, this perspective is not
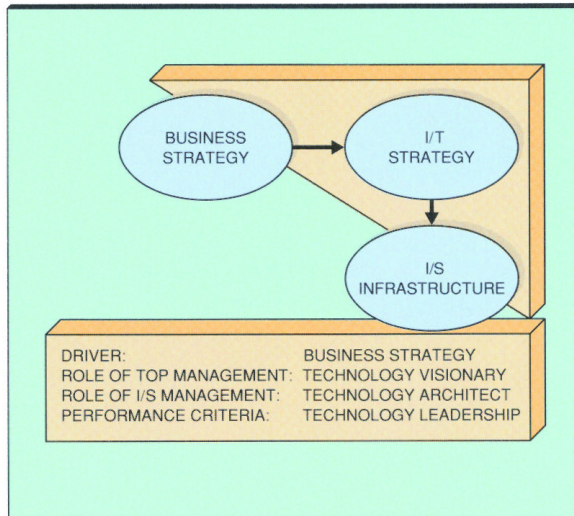
constrained by the current organization design, but instead seeks to identify the best possible I/T competencies through appropriate positioning in the I/T marketplace, as well as identifying the corresponding internal I/S architecture. For example, United Services Automobile Association (USAA), a leading U.S. insurance company, decided that their business strategy of low-cost insurance delivery via telemarketing required the development of a superior document-handling system based on state-of-the-art electronic imaging technology. Since such technology was not available, they pursued a joint development venture with IBM. Their I/T strategy involved defining this key technology scope and the associated critical competencies and committing to a technology alliance. Equally important, however, the strategic management process also defined the changes in the I/S infrastructure that were necessary to execute this technology strategy. Thus, they understood the issues in migrating their technology architecture, including the need to invest in the development of a data architecture.

Another example is American Express Travel Related Services Co., Inc., whose business strategy is anchored on two technology-based competencies: providing quick approval of purchases made by charge card and providing copies of receipts to the cardholders. The approval process on a charge card (without any preset spending limit) typically has a longer lead time than a corresponding transaction involving their competitors' credit cards (with a preset spending limit). It was imperative that American Express match the response time of the leading competitors to reduce the possibility of the cardholder switching to an alternative, faster-transacting card. This business strategy required a systemic competence involving expert systems (Authorizer's Assistant**) as well as corresponding changes in the internal I/S organization for developing, maintaining, and controlling the systems. The second component, called ECCB (Enhanced Country Club Billing**), refers to their business practice of providing copies of all charge slips with the monthly statement. Although cardholders expressed satisfaction with this service, the cost of maintaining and distributing the slips was becoming prohibitive in the traditional mode. Their investment in an optical-scanning, storage, and laser-printing system allowed the delivery of the same level of service more efficiently.

These examples highlight the *impact* of business strategy (especially, distinctive competence) on I/T strategy (I/T governance and systemic competencies, respectively) and the corresponding implications for I/S infrastructure and processes. Techniques used to aid executives in the development of this strategy include technology forecasting and a variety of architectural planning approaches. The role of executive management in this perspective is to provide *technology vision* that would best support the chosen business strategy. The role of the I/S manager should be that of the *technology architect*, who efficiently and effectively designs and implements the required I/S infrastructure that is consistent with the I/T vision (scope, competencies, and governance). The performance criteria in this perspective are based on technology leadership, often utilizing a benchmarking approach to assess the position of the firm in the I/T marketplace.

I/T strategy as the enabler. The following two cross-domain relationships arise when management explores how I/T might enable new or enhanced business strategies with corresponding organizational implications.

Perspective Three: Competitive potential. As shown in Figure 4, this alignment perspective is concerned with the exploitation of emerging I/T

capabilities to impact new products and services (business scope), influence the key attributes of strategy (distinctive competencies), and develop new forms of relationships (business governance). Unlike the previous perspective that considers business strategy as given (or, a constraint for organizational transformation), this perspective allows the adaptation of business strategy via emerging I/T capabilities. Beginning with the three dimensions of I/T strategy, this perspective seeks to identify the best set of strategic options for business strategy and the corresponding set of decisions pertaining to organizational infrastructure and processes.

Key examples of this perspective include the exploitation by Baxter Healthcare of its I/T position (enhanced technology scope, greater systemic competencies, and governance with IBM through the Spectrum joint venture that will provide software service to the health care marketplace) to deliver superior, value-added service to its hospital customers and the consequent implications for redesigning the internal organizational processes.[18] Similarly, the attempt by Federal Express Corp. to create a new standard for overnight delivery, through its COSMOS/PULSAR** system, with corresponding implications for redesigning its internal processes or the ability of American Express, through its IDS Financial Corporation, to leverage its I/T infrastructure to develop capabilities for electronically filing income tax returns and for customized financial products reflect how an effective I/T positioning can be used to enhance or create new business strategies. That is, in each of these cases, an important enabler of the ability of the firm to move quickly to acquire technology or achieve the competencies necessary to embark on their strategy was their position in the I/T market.

The specific role of top management to make this perspective succeed is that of the *business visionary*—one who articulates how the emerging I/T competencies and functionality as well as changing governance patterns in the I/T marketplace would impact the business strategy. The role of the I/S manager, in contrast, is one of the *catalyst*—one who identifies and interprets the trends in the I/T environment to assist the business managers to understand the potential opportunities and threats from an I/T perspective. The performance criteria in this perspective are based on business leadership with qualitative and quanti-

Figure 4 Competitive potential alignment perspective
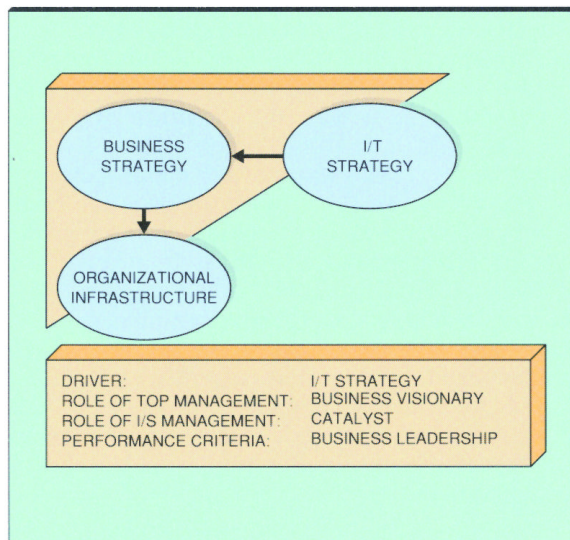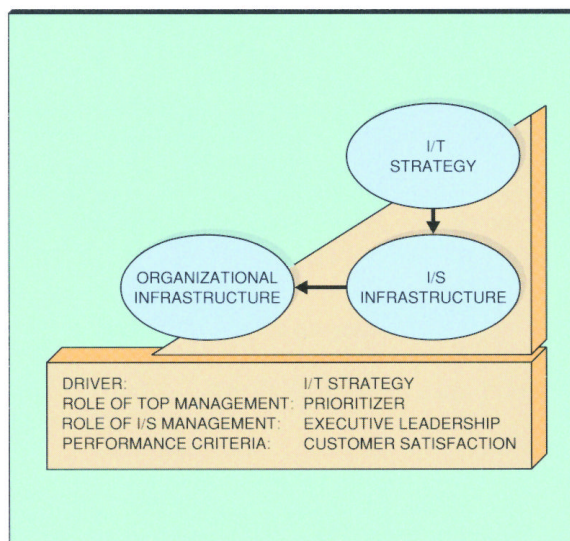

Figure 5 Service level alignment perspective

tative measurements pertaining to product leadership such as market share, growth, or new product introduction.

Perspective Four: Service level. As shown in Figure 5, this alignment perspective focuses on how to build a world-class I/S service organization.

This requires an understanding of the external dimensions of I/T strategy with corresponding internal design of the I/S infrastructure and processes. This strategic fit for I/T creates the capacity to meet the needs of I/S customers. In this perspective, the role of business strategy is indirect and is viewed as providing the direction to stimulate customer demand. This perspective is often viewed as necessary (but not sufficient) to ensure the effective use of I/T. The I/S organization must deploy resources and be responsive to the growing and fast-changing demands of the end-user population. Analytical methodologies even partially reflecting this perspective require a systematic analysis of both the customer needs and the products and services that currently exist, along with those under development. Examples of analytical methods include end-user-needs surveying,[19] service-level contracting,[20] and architectural planning.[21]

The specific role of top management to make this perspective succeed is that of the *prioritizer*, the one who articulates how best to allocate the scarce resources both within the organization and in the I/T marketplace (in terms of joint ventures, licensing, minority equity investments). The role of the I/S manager, in contrast, is one of *executive leadership*, with the specific tasks of making the internal service business succeed within the operating guidelines from top management. The performance criteria in this perspective are based on customer satisfaction obtained with qualitative and quantitative measurements using internal and external benchmarking.

Key Issues and management challenges

Differentiating strategic alignment from traditional linkage. The Strategic Alignment Model in some ways reflects and accommodates a long history of research and practice concerning the most effective means of linking business and technology strategies. However, the concept of strategic alignment differs from the traditional views of linkage in four important ways (see Table 1). First, the Strategic Alignment Model calls for a fundamental shift in the focus of the I/S function from an internal orientation toward one of strategic fit within the I/T domain, namely, recognition of the external I/T marketplace in terms of the scope of the technologies, the desired level of competencies, and the locus of governance. This

shift is important if we consider that I/T has the potential to shape business competencies and actions in the product-market arena.

Second, whereas the traditional management objectives for the I/S function were geared toward ensuring that I/S activities are linked with the business requirements, we argue that future challenges deal with the selection of appropriate alignment perspectives (out of the four dominant ones identified in this paper) that best suit the business conditions and organizational objectives. This argument requires the business leadership to consider a broader vision of the potential role and scope of I/T within organizations. In essence, the contextual frame of reference for understanding and making strategic choices varies. One implication of this variation is the need to alternate planning processes to ensure that critical issues associated with the different perspectives are addressed systematically.

Third, the model and the alternative alignment perspectives highlight the diversity of roles carried out by both line and I/S executives. As discussed earlier, the line executives must, at times, assume traditional leadership roles associated with strategy implementation. At other times, however, alignment requires roles including those of business visionary, technology visionary, and prioritizer. For the I/S managers, the roles range from the traditional functional manager (resource optimizer) to executive leadership, technology architect, and change catalyst. Recognizing the diversity of these roles and ensuring that the right role is present for the right alignment perspective is, we argue, an important enabler of achieving strategic alignment. Finally, the criteria for performance assessment expand from cost and service considerations to a larger set involving multiple goals—both operational and strategic. The need to view organizational performance from multiple perspectives is widely recognized.[22] The Strategic Alignment Model helps to articulate and emphasize how the performance criteria shift across different alignment perspectives and argues that each set of criteria should be present across different stages in evolution.

Management implications. Several key implications can be derived from the Strategic Alignment Model. First, one possible reason for the current dissatisfaction with the level of integration be-

Table 1 Differentiating strategic alignment from traditional views on linkage

Characteristics	Traditional Linkage	Strategic Alignment
Predominant focus of information systems and technology	Internal I/S function and organization	Internal I/S function and organization *and* external I/T marketplace
Management objectives	Ensuring that I/S activities are linked to business requirements	Selecting appropriate alignment perspectives for achieving business objectives
I/S executive roles	Line leadership and I/S functional support	Multiple executive roles for line and I/S managers
Dominant criteria for performance assessment	Cost and service considerations	Multiple criteria

tween the business and I/S domains and possibly the absence of value derived from I/T investments lies in the lack of understanding of the enabling strategic choices that bind a business strategy and I/S infrastructures. Viewed within the Strategic Alignment Model shown in Figure 1, the direct link between business strategy (top left) and I/S infrastructure (bottom right) can only derive its logic within the context of the two alignment perspectives that have business strategy as the driver: *strategy execution* and *technology transformation*. In the former case, the link derives its meaning by translating the implications of business strategy for the organizational infrastructure with subsequent demands for I/S products and services. In the latter case, the linkage is achieved through the effective positioning of the firm in the I/T marketplace, namely, the specification of the three components of I/T strategy and the consequent implications for the three internal components of the I/S infrastructure and processes.

The prescription from the Strategic Alignment Model is that both perspectives should be considered for attaining the best possible link between business strategy and the I/S infrastructure. More importantly, the senior line management must understand both perspectives. Too often, we believe, line management is engaged in the process of strategy execution but delegates—explicitly or implicitly—the responsibility for technology transformation. There appears to be one exception—in the case of I/T outsourcing. However, even in this case, we believe that the decisions are viewed from a general sense of dissatisfaction with the costs and performance of the internal I/T infrastructure and processes rather than as a primary desire to be actively pursuing a position and stake in the I/T marketplace.

Similarly, the direct link between an I/T strategy and organizational infrastructure has no straightforward logic. One cannot and should not simply seek to identify and adopt the best available technology to restructure the organization or streamline the business processes without due consideration to the two alignment perspectives that have I/T strategy as the driver: *competitive potential* and *service level*. The former identifies the potential impact of I/T strategy on business strategy with consequent implications for the organizational infrastructure. The latter seeks to provide the best possible service to the internal client by developing the appropriate basis for the redesign of the I/S infrastructure. We would expect that in the absence of such understanding, there would be a significant probability of failure for investments made to transfer business processes, because of an inability to provide the information necessary to execute the processes.

Second, managers need to reconceptualize the scope and power of the I/T strategy of the firm. The Strategic Alignment Model highlights the compelling need to view the strategic choices in the I/T domain in terms of both an external and an internal orientation. Although the internal focus is traditional with a requirement to support higher-level (corporate and business) strategies, we believe it is also important to have an external focus—in terms of the requirements of positioning the firm in the I/T marketplace (I/T scope, systemic competencies, and I/T governance). This level of understanding will become more impor-

tant as firms realize that the source of I/T competencies is not entirely within the firm but involves a complex array of alliances and partnerships with a wide-ranging set of firms in the marketplace.

Third, the criteria to assess the performance of the I/T function should be reconceptualized. It is expected that the I/T manager would be evaluated using a mix of four criteria: evaluation as a *cost center* (to ensure that the internal I/S organization has its cost levels for delivering the required level of support comparable to the external I/T vendor community actively soliciting outsourcing contracts), evaluation as a *service center* (with levels of service quality that are comparable to the best-in-industry as well as best-in-class), evaluation as a *profit center* (to create a sense of market referent within the I/S organization), and evaluation as an *investment center* (through investments such as a minority equity stake in emerging technologies, joint research and development investments, joint ventures, technology licensing, and other means to enhance the required I/T competencies). In the absence of such a fundamental shift in the criteria used to assess the performance of the I/T function, the I/S organization would not have emerged as a serious and significant member of the top management team. Indeed, we should strive to assign appropriate performance criteria for the different alignment perspectives.

Finally, the use of this model requires an understanding of its intrinsic dynamic nature. Many of the strategic planning techniques popularized in the 1970s and 1980s have gone out of favor—not because of the weakness in their logic, but due to their failure to recognize the dynamic nature of strategy. Managers are painfully aware that the real business challenge is not static alignment among the four domains at any one point in time (when the strategic planning exercise is carried out!), but ensuring continual assessment of the trends across these four domains to allow them to reposition the firm in the external environment and rearrange their internal infrastructure. We urge managers to recognize seriously the need to evolve from one perspective to another based on shifts in the business environment—both internal and external. This is consistent with the current emphasis on the centrality of learning and adaptation for achieving successful organizational transformation. As one senior manager who is in the midst of adopting the Strategic Alignment Model said: "The most important lesson to keep in mind is that strategic alignment is a journey and not an event."

Concluding remarks

We have been asked on numerous occasions: "Which alignment perspective is the best?" As researchers and observers of strategic management phenomena, we do not believe that there is one universally superior mode to formulate and implement strategy. If there were, it would not be strategic because all firms would adopt it. The four dominant alignment perspectives that use the two strategies as the driver are equally useful and powerful in thinking about the role of I/T in organizational transformation. Indeed, we urge managers not to consider I/T as a panacea and consequently focus only on those two perspectives with I/T strategy as the starting point (namely, competitive potential and service level). Nor do we want to argue that business strategy should always be the starting point and adopt only the other two perspectives on strategic alignment. The potential for I/T impact is so varied and complex that the executive must consider these perspectives as alternative conceptual lenses and be prepared to continuously make adaptations.

Other papers in this special issue deal with a set of themes that complement the strategic alignment concept. Specifically, the paper by Luftman, Lewis, and Oldach[23] explores in more pragmatic detail how to translate the Strategic Alignment Model into management frameworks and action plans for the transformation of the enterprise. Keen[24] develops a companion concept of a *fusion map* to link information technology to business operations; Boynton, Victor, and Pine[25] examine some of the structural transformations in the market and explore the potential role of information technology capabilities; Davidson[26] provides a complementary perspective by looking at the role of organizational competencies enhanced through information technology; Konsynski[27] considers in some detail the possibility of redefining firm boundaries through information technologies and the required management strategies to compete in the changing marketplace; and Broadbent and Weill[28] discuss valuable lessons from cases in the Australian banking industry on this topic.

Our hope is that the conceptual model of strategic alignment and the companion papers will go a

long way toward providing a set of ideas, tools, and illustrations to leverage the emerging capabilities of I/T for transforming organizations and markets.

**Trademark or registered trademark of Baxter Healthcare Corp., McGraw-Hill, Inc., Citibank, N.A., American Express, or Federal Express Corp.

Cited references

1. P. G. W. Keen, *Shaping the Future*, Harvard Business School Press, Boston, MA (1991).
2. B. R. Konsynski and W. F. McFarlan, "Information Partnerships—Shared Data, Shared Scale," *Harvard Business Review* **68**, No. 5, 114–120 (September-October 1990).
3. M. S. Scott Morton, *The Corporation of the 1990s*, Oxford University Press, Oxford (1991).
4. N. Venkatraman, "Information Technology-Induced Business Reconfiguration: The New Strategic Management Challenge," *The Corporation of the 1990s*, M. S. Scott Morton, Editor, Oxford University Press, Oxford (1991).
5. S. S. Roach, "Services under Siege—The Restructuring Imperative," *Harvard Business Review* **69**, No. 5, 82–91 (September-October 1991).
6. A. C. Hax and N. S. Majluf, *The Strategy Concept and Process: A Pragmatic Approach*, Prentice-Hall, Inc., Englewood Cliffs, NJ (1991).
7. N. Venkatraman and J. C. Camillus, "Exploring the Concept of 'Fit' in Strategic Management," *Academy of Management Review* **9**, 513–525 (1984).
8. A. D. Chandler, *Strategy and Structure: Chapters in the History of American Enterprise*, The M.I.T. Press, Cambridge, MA (1962).
9. M. M. Parker and R. J. Benson, with H. E. Trainor, *Information Economics: Linking Business Performance to Information Technology*, Prentice-Hall, Inc., Englewood Cliffs, NJ (1988).
10. J. C. Henderson, J. F. Rockart, and J. G. Sifonis, "Integrating Management Support Systems into Strategic Information Systems Planning," *Journal of Management Information Systems* **4**, No. 1, 5–23 (1987).
11. W. R. King, "Strategic Planning for Management Information Systems," *MIS Quarterly* **2**, No. 1, 27–37 (1978).
12. E. R. McLean and J. V. Soden, *Strategic Planning for MIS*, John Wiley & Sons, Inc., New York (1977).
13. A. C. Boynton and R. W. Zmud, "Information Technology Planning in the 1990s: Directions for Practice and Research," *MIS Quarterly* **11**, 59–71 (1987).
14. P. J. Pyburn, "Linking the MIS Plan with Corporate Strategy: An Exploratory Study," *MIS Quarterly* **7**, No. 2, 1–14 (1983).
15. J. F. Rockart, "Chief Executives Define Their Own Data Needs," *Harvard Business Review* **57**, No. 2, 81–93 (1979).
16. *Information Systems Planning Guide, Business Systems Planning*, GE20-0527-2, 3rd edition, IBM Corporation (July 1981); available through IBM branch offices.
17. J. Martin, *Strategic Data Planning Methodologies*, Prentice-Hall, Inc., Englewood Cliffs, NJ (1982).
18. N. Venkatraman and J. E. Short, "Strategies for Electronic Integration: From Order-Entry Systems to Value-Added Services at Baxter," MIT Center for Information Systems Research Working Paper, Cambridge, MA (1991).
19. R. M. Alloway and J. A. Quillard, "User Managers' Systems Needs," *MIS Quarterly* **7**, 27–41 (1983).
20. R. L. Leitheiser and J. C. Wetherbe, "Service Support Levels: An Organized Approach to End-User Computing," *MIS Quarterly* **10**, No. 4, 337–349 (1986).
21. J. A. Zachman, "A Framework for Information Systems Architecture," IBM Los Angeles Scientific Center Report, G320-2785 (March 1986). Also in *IBM Systems Journal* **26**, No. 3, 276–292 (1987).
22. N. Venkatraman and V. Ramanujam, "Measurement of Business Performance in Strategy Research: A Comparison of Approaches," *Academy of Management Review* **11**, No. 4, 801–814 (1986).
23. J. N. Luftman, P. R. Lewis, and S. H. Oldach, "Transforming the Enterprise: The Alignment of Business and Information Technology Strategies," *IBM Systems Journal* **32**, No. 1, 198–221 (1993, this issue).
24. P. G. W. Keen, "Information Technology and the Management Difference: A Fusion Map," *IBM Systems Journal* **32**, No. 1, 17–39 (1993, this issue).
25. A. C. Boynton, B. Victor, and B. J. Pine II, "New Competitive Strategies: Challenges to Organizations and Information Technology," *IBM Systems Journal* **32**, No. 1, 40–64 (1993, this issue).
26. W. H. Davidson, "Beyond Re-engineering: The Three Phases of Business Transformation," *IBM Systems Journal* **32**, No. 1, 65–79 (1993, this issue).
27. B. R. Konsynski, "Strategic Control in the Extended Enterprise," *IBM Systems Journal* **32**, No. 1, 111–142 (1993, this issue).
28. M. Broadbent and P. Weill, "Improving Business and Information Strategy Alignment: Learning from the Banking Industry," *IBM Systems Journal* **32**, No. 1, 162–179 (1993, this issue).

General references

J. J. Cash and B. Konsynski, "I/S Redraws Competitive Boundaries," *Harvard Business Review* **63**, No. 2, 134–142 (1985).

A. C. Hax and N. S. Majluf, *Strategic Management: An Integrative Perspective*, Prentice-Hall, Inc., Englewood Cliffs, NJ (1984).

J. C. Henderson, "Plugging into Strategic Partnerships: The Critical I/S Connection," *Sloan Management Review* **31**, No. 3, 7–18 (1990).

J. C. Henderson and J. G. Sifonis, "The Value of Strategic I/S Planning: Understanding Consistency, Validity, and I/S Markets," *MIS Quarterly* **12**, 187–200 (1988).

B. Ives and G. P. Learmonth, "The Information System as a Competitive Weapon," *Communications of the ACM* **27**, 1193–1201 (1984).

H. R. Johnston and P. Lawrence, "Beyond Vertical Integration—The Rise of Value-Adding Partnerships," *Harvard Business Review* **66**, No. 4, 94–101 (July-August 1988).

R. Kling, "Social Analyses of Computing: Theoretical Perspectives in Recent Empirical Research," *Computing Surveys* **12**, No. 1, 61–110 (1980).

M. L. Markus and D. Robey, "Information Technology and Organization Change: Causal Structure in Theory and Research," *Management Science* **34**, No. 5, 583–598 (1988).

F. W. McFarlan, "Information Technology Changes the Way You Compete," *Harvard Business Review* **62**, No. 3, 98–103 (1984).

M. E. Porter and V. E. Millar, "How Information Technology Gives You Competitive Advantage" *Harvard Business Review* **63**, No. 4, 149–160 (July-August 1985).

J. F. Rockart and J. E. Short, "I/T in the 1990s: Managing Organizational Interdependence," *Sloan Management Review* **30**, No. 2, 7–17 (1989).

P. Strassman, *The Information Payoff*, The Free Press, New York (1985).

R. W. Zmud, A. C. Boynton, and G. C. Jacobs, "The Information Economy: A New Perspective for Effective Information Systems Management," *Data Base* **16**, No. 1, 17–23 (1986).

S. Zuboff, *In the Age of the Smart Machine*, Basic Books, New York (1988).

John C. Henderson *Systems Research Center, School of Management, Boston University, 704 Commonwealth Avenue, Boston, Massachusetts 02215 (electronic mail: smg9j2n @buacca.bu.edu).* Dr. Henderson is Professor of Management Information Systems and Director of the Systems Research Center at the Boston University School of Management. He earned his Ph.D., M.S., and B.S. degrees from the University of Texas at Austin. His early work focused on decision support systems and the development of prototyping as an approach to developing both decision support systems and the more traditional management information systems. Presently, his research is focused in three areas: the alignment of business and information technology strategies, the role of information technology in building and managing strategic partnerships, and the use of information technology to support software development teams. He has held faculty appointments at Florida State University and Ohio State University and has served as staff director for the Joint Committee on Electronic Data Processing at the Florida legislature. Prior to coming to Boston University, Dr. Henderson was on the faculty of the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology. He is the author of a number of articles dealing with management and information technology issues.

N. Venkatraman *Alfred P. Sloan School of Management, E52-537, Massachusetts Institute of Technology, 50 Memorial Drive, Cambridge, Massachusetts 02135.* Dr. Venkatraman is an associate professor at the Sloan School of Management. He holds a Ph.D. from the University of Pittsburgh, an M.B.A. from the Indian Institute of Management, and a B.Tech. from the Indian Institute of Technology. Dr. Venkatraman has published extensively in professional and management journals and serves on the editorial boards of *Sloan Management Review* and the *Academy of Management Review*. For his Ph.D. dissertation he received the 1986 A. T. Kearney Award for Outstanding Research in General Management.