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**STRATEGIC ISSUES IN  
INFORMATION TECHNOLOGY  
SOURCING: PATTERNS, PERSPECTIVES,  
AND PRESCRIPTIONS**

**N. Venkatraman  
Lawrence Loh**

**February 1993**

**CISR WP No. 251  
Sloan WP No. 3535-93**

**Center for Information Systems Research**

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Sloan School of Management  
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## EXECUTIVE SUMMARY

Information technology (IT) strategy over the next few years will increasingly reflect organizational responses to the compelling issue of IT outsourcing -- particularly in view of the increased desire to "focus on core competences" and to be the "best in class" providers of product or service quality. The MIT Study on IT Strategy sought to better understand the critical role of IT in modern organizations -- especially pertaining to the mode of acquiring IT-based competences. This report summarizes the key findings of the study for both business and IT managers by focusing on three dimensions:

### Patterns of Change in IT Strategy

We find that the role of the CIO is attaining a steady state: the CIO is increasingly playing a critical role in the strategic management of the corporation; further, the CIO is expected to be an important partner to the CEO and COO in the strategic planning for IT. The information systems (IS) function is evolving rapidly from a support function to becoming more like a business -- with decreasing importance of technical criteria of performance assessment and increasing importance of business criteria. We also observe that the current interest in IT outsourcing as a component of IT strategy goes beyond the widely publicized megadeals. Our thesis is that more focused, selective relationships that are being adopted in both the "strategic" and the "operational" arenas of IT will become important in the future.

### Perspectives on IT Sourcing

We contend that IT sourcing decisions should be made by balancing the benefits and risks within an overall portfolio of relationships. Our results show that the main benefit of outsourcing is the access to IT-based expertise or competence, while the major risk is irreversibility of the decision. In contrast to focusing on activities that could be outsourced, we develop a new approach to making sourcing choices based on the *allocation of decision rights* between the user organization and the vendor. This involves recognizing a continuum for locating the decision rights, and encompasses several alternative user-vendor arrangements. Our research also implies that IT sourcing decisions have the potential for enhancing shareholder value; thus the stock market is an important referent in making effective sourcing strategies.

### Prescriptions for IT Sourcing Strategy

We believe that every firm should be continually evaluating the best set of sources for obtaining the required IT competences. Our view of outsourcing calls for selecting the appropriate locus of IT governance involving both internal and external arrangements. Outsourcing shifts the authority for IT decisions, but it never shifts the responsibility. We further call for a recognition that the benefits from outsourcing extend beyond the traditional considerations of improved cost and service levels; it is far more important to focus on enhancement of value from IT investments -- reflecting four components: cost center, service center, profit center, and investment center.

In conclusion, our thesis is that effective governance of the IS function is "more than outsourcing." It is not a one-shot decision (insourcing versus outsourcing) but a continuous set of decisions pertaining to a portfolio of relationships that are spread across internal and external providers with a view to maximize the value from IT investments.

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## PREFACE

The conventional wisdom in the information systems (IS) profession and the general business community appears to view information technology (IT) as an important component of corporate strategies. Extensive writings in professional journals and trade periodicals have consistently suggested that aligning IT strategy with business strategy is an important lever for success in the competitive marketplace. To move beyond casual observations, we at the Sloan School of Management, Massachusetts Institute of Technology conducted a research study to examine the state of corporate IT strategy, with a particular focus on IT outsourcing that is a current topic of considerable importance.

During Fall 1991, we wrote to the CEOs of the Fortune 500 industrial and service corporations with an invitation to participate in our Study on Information Technology Strategy. We requested each of them to provide us with names of the senior manager with the overall responsibility for IT (CIO) as well as those heading three specific IT domains: application development, data center, and telecommunications/network. Subsequently, 209 corporations took part in our study (see Appendix for a complete list). The surveys were administered to the appropriate executives during Spring-Summer 1992.

On November 19, 1992, we invited the CIO or a senior representative from each of the participating corporations to a symposium in Cambridge, Massachusetts. This forum was co-organized by the Center for Information Systems Research, MIT and the Systems Research Center, Boston University. The responses of the participants during this meeting were generally enthusiastic. In fact, our understanding of the research issues was enriched through the various face-to-face conversations with the participants at the symposium.

This report is a summary of the research conducted on IT sourcing strategy at Sloan over the last year. It integrates the results drawn from our surveys of Fortune 500 corporations with other studies we conducted using secondary data sources. Further, it incorporates some of the insightful observations provided by speakers and audience during the symposium.

The report is divided into three major sections -- patterns, perspectives, and prescriptions. In the first section, we highlight the key patterns of changes relevant to IT strategy that we observed during the study. Using these patterns as a backdrop, in section two, we delineate several central perspectives on IT outsourcing. These perspectives highlight the major considerations that should guide outsourcing decisions and actions. The third section develops a set of prescriptions for viewing IT outsourcing as an important component of IT strategy. We conclude with our view of IT governance as a broader way of considering IT outsourcing decisions. This, we believe, would constitute the logic for managing the IT function in the 1990s and beyond.



## PATTERNS OF CHANGE IN IT STRATEGY

**W**e are on the threshold of a significant transformation -- not only in how organizations leverage their IT capabilities to create powerful sources of competitive advantage but also in terms of how firms structure and manage their IT function. Beyond profound shifts in the characteristics of technology itself -- from mainframes to distributed processing -- we are witnessing fundamental organizational changes relevant to the IT function. These include not only greater control exercised by user organizations but also significant involvement of external IT vendors in co-developing the necessary IT competences. Along these developments, IT strategy has not only become more complex but also more important than ever before.

We observe three patterns of change central to IT strategy with a particular focus on IT sourcing:

- Role of the CIO -- From turbulence to steady-state**
- IS organization -- From a support function to a business**
- Outsourcing -- Beyond multi-billion dollar deals**

### **Pattern One: Role of the CIO -- From Turbulence to Steady-State**

**D**uring the late 1980s, we saw the emergence of a new senior management position -- chief information officer (CIO). *Business Week* heralded this milestone with a 1986 special report highlighting the emergence of the CIO as the "management's newest star."<sup>1</sup> A few years later in 1990, the same periodical suggested the demise of this position in a provocative article: "CIO Is Starting to Stand for 'Career is Over.'"<sup>2</sup> At the same time, the *CIO* magazine indicated that there is a high level of turnover amongst the CIOs -- perhaps the highest within the top management team,<sup>3</sup> thus raising a lot of uncertainty regarding the role of the CIO. As a respondent to our survey aptly puts it: "After several years of playing along with the myth of CIO guru, senior management of the firm reclaimed responsibility for this key area, and it was outsourced..."

We believe that we are reaching a steady-state in terms of clarifying the role of CIO. Three significant trends emerge from our study:

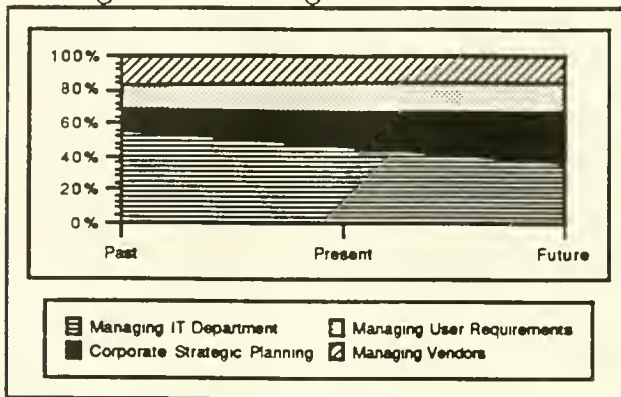
**CIO as an active member of the strategic management process.** Our study indicates that the elevation of the role from a "custodian of computer resources" to a strategic-level position calls for the CIO to play a more active part in the strategic management of the corporation (Figure 1). Specifically, the expectation is that an effective CIO will have a direct, influential part in the strategic planning process. Simultaneously, they are expected to reduce their attention for managing the administrative tasks of the IT department. It is also becoming increasingly evident that the capability of a firm to exploit IT functionality is significantly enhanced when the CIO becomes an active, decision-making member of the overall strategic planning process. In fact, a CIO in our survey wrote: "I am responsible for strategic planning in

<sup>1</sup>Bock, G., "Management's Newest Star," *Business Week*, October 13, 1986.

<sup>2</sup>Rothfeder, J., "CIO Is Starting to Stand for 'Career Is Over,'" *Business Week*, February 26, 1990.

<sup>3</sup>Alter, A.E., "A New Twist on Turnover," *CIO*, October, 1990.

**Figure 1: Shifting Role of the CIO**

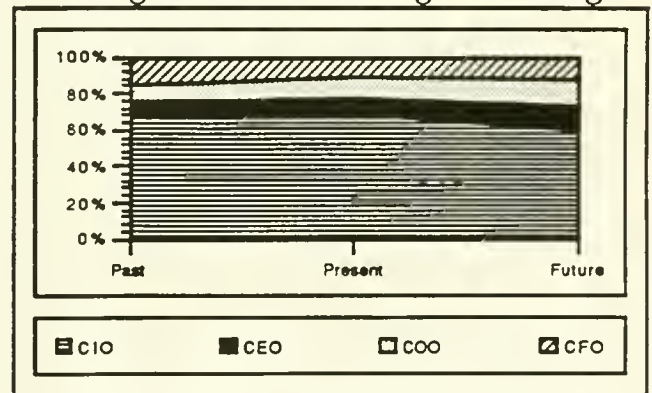


the company, which positions the IT organization for effective strategic planning and good top management interaction."

**CIO as a co-participant in IT strategic planning.** Given the pervasiveness of IT capabilities within a distributed environment, we observe that the CIO is becoming less of a "sole decision-maker" regarding technology decisions and more of a coordinator of a multi-faceted team. Such a team includes other members of the top management

cadre: especially, CEO, COO, and CFO. In our study, we observed that the the relative participation of CEO and COO are expected to rise over the next three years while the relative participation of the CFO is expected to decrease (Figure 2). We strongly believe that a predominantly cost-oriented approach to managing the IS function ("justifying IT investments independently") is being replaced by a business-focused view ("justifying IT investments *within* a business setting"). The CIO, then, is expected to ensure consistent and efficient utilization of IT functionality within the business operations -- thus, calling for a shift in the criteria for allocating resources for IT.

**Figure 2: Participation of Senior Management in IT Strategic Planning**



**Creating and maintaining a rapport with CEO more critical than ever before.** Our analysis indicates that the rapport between the CIO and the CEO is a very important predictor of the business value derived from the IT infrastructure. This result perhaps

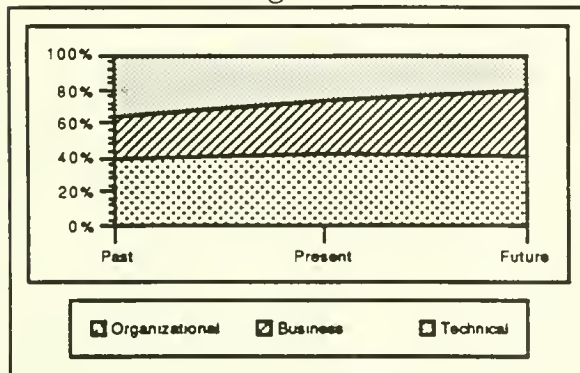
further highlights the need to resolve the traditional "conflict" between the CEO -- who usually emphasizes long-term competitive advantage -- and other specialized members of the top management team, such as the CFO -- who is concerned about maintaining shareholder value. Indeed, we infer that the creation of a consensus between the CIO and the CEO (through a business-focused vocabulary to discuss the role and effects of IT and IS) is instrumental in developing an IS organization that contributes maximally to the delivery of products and services to the internal end-users. We believe that such a rapport will be a major factor that discriminates between those successful in leveraging IT functionality and those that derive marginal benefits.

## Pattern Two: IS Organization – From a Support Function to a Business

The shift in the role of the IS function is best seen in the changing pattern of criteria used for its performance assessment. The importance of measurement cannot be understated (“what you measure is what you get”) since the specification of performance metrics has a strong influence on managerial decisions and actions. The metric for IS effectiveness has evolved from *code analytic* (1970-1978), through *design analytic* (1978-1984) and *function analytic* (1984-1990), to the current *business directed* (1990-present) measures.<sup>4</sup> This signals a shift in managerial attention away from technical output to the economic benefits and implications of IT investments. Among these developments, the following trends are noteworthy:

**Decreasing emphasis of technical criteria in performance assessment.** Our research indicates a very clear trend in the criteria used by: (a) the IS organization for its own internal assessment; and (b) the top management to evaluate the IS function (Figures 3 and 4). Specifically, the importance of business criteria (e.g., return on investment, contribution to product quality) are increasing while that of technical criteria (e.g., function points, system reliability) are decreasing. The organizational criteria (e.g., user satisfaction, timeliness) remain unchanged in terms of relative significance over time.

**Figure 3: Internal Assessment of IS Organization**



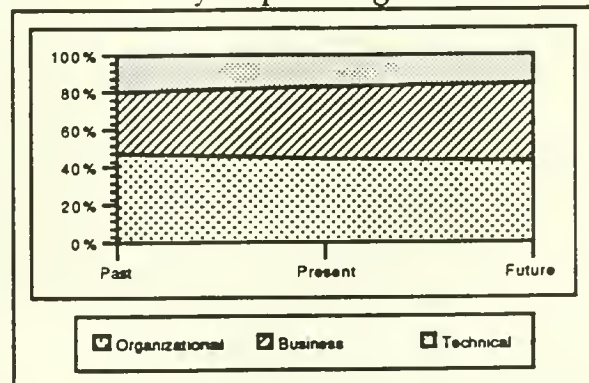
investment, contribution to product quality) are increasing while that of technical criteria (e.g., function points, system reliability) are decreasing. The organizational criteria (e.g., user satisfaction, timeliness) remain unchanged in terms of relative significance over time.

**Organizing the IS function as more than a cost center.** Firms have traditionally viewed the IS organization as a *cost center* (i.e., an administrative overhead to be allocated to users). More recently,

some have begun to view it as a *service center* (i.e., a technical support group that renders specialized assistance to end-users). Most of the firms in our study can be classified as either a cost or a service center.

An interesting observation from our study is that innovative firms are beginning to view their IS function as an *investment center* (i.e., a strategic resource to provide IT-related capability for business advantage) or as a *profit center* (i.e., a revenue-generating entity that sells IS services to internal and external users). For instance: it has been known that *American Express* has substantially embraced an investment center approach for acquiring new IT-based competences, and *Paine Weber* has

**Figure 4: Assessment of IS Organization by Top Management**



<sup>4</sup>Rubin, H., “Measure for Measure,” *Computerworld*, April 15, 1991.

recently positioned its IS organization as a profit center whereby the excess capacity of the data center is being sold to outside users.

Our results suggest that firms adopting an investment-center orientation tend to have a more effective IT infrastructure (assessed in terms of technical, organizational, and business criteria). At the same time, our results show that positioning the IS organization as either a cost center or a service center does not seem to provide the firms with any appreciable IT-related benefits.

### **Pattern Three: Outsourcing -- Beyond Multi-Billion Dollar Deals**

Multi-year, multi-billion dollar deals have popularized IT outsourcing. During our research, we tracked over ten deals of half a billion dollars or more in size (Table 1). In most of these cases, the companies outsourced a significant component of their IT infrastructure, such as entire data centers (example: General Dynamics) or the enterprise-wide network systems (example: McDonnell Douglas).

These top deals grabbed headlines -- not only in trade periodicals like *Computerworld* and *Information Week*, but also in mainstream magazines like *Fortune* and *Business Week* and journals like the *Harvard Business Review*.<sup>5</sup> But, not all IT outsourcing deals fit into

the description of: "multi-year, multi-billion dollars." Our assessment is that these large outsourcing agreements are the exceptions rather than the rule. In fact, our research identified two significant trends:

**Table 1: Top Megadeals in IT Outsourcing**

User/Vendor	Contract Size
General Dynamics/CSC	\$ 3000 million
McDonnell Douglas/IBM	\$ 3000 million
United Technologies/IBM	\$ 2500 million
Continental Airlines/EDS	\$ 2100 million
Blue Cross Blue Shield/EDS	\$ 800 million
Enron/EDS	\$ 750 million
Continental Bank/IBM	\$ 700 million
First City Bancorp/IBM	\$ 600 million
Bethlehem Steel/EDS	\$ 500 million
Eastman Kodak/IBM	\$ 500 million
Equifax/IBM	\$ 500 million
General Electric/EDS	\$ 500 million
National Car Rental/EDS	\$ 500 million

**From megadeals to focused business arrangements.** We observe a steady increase in the overall degree of outsourcing for all three IT domains -- application development, data center, and etwork -- over the last three years. These involve, in most cases, limited areas of IT infrastructure, such as specific software development projects or one-time systems integration efforts. We believe that these focused business

arrangements constitute the mainstay of the outsourcing marketplace rather than the occasional (and sensational) megadeals.

In examining differences across the three core domains of the IT infrastructure, we found that outsourcing is more prevalent in application development, followed by telecommunications/network, and then the data center. In general, outsourcing arrangements in application development are smaller in size and scope than those in

<sup>5</sup> Huber, R.L., "How Continental Bank Outsourced Its 'Crown Jewels'," *Harvard Business Review*, January-February, 1993.



the other two domains. Many companies are relying on multiple vendors for different types of software and application development contracts. This supports our view that a "portfolio" approach to managing external (and internal) relationships seems to be the dominant outsourcing mode rather than one reflecting a single transfer of IT infrastructure along with the entire domain of operations.

**"Strategic outsourcing" in addition to "operational outsourcing."** We have been asked on numerous occasions: "Is outsourcing occurring more in those areas that could be categorized as utility ('operational outsourcing') than in areas that are considered potential sources of competitive advantage ('strategic outsourcing')?" Based on our analysis of CIO assessment of the relative importance of three domains (Table 2), it appears that application development is most critical to the IT infrastructure, followed by the telecommunications network, and then the data center; this pattern is even more accentuated in terms of their significances to the overall business. This supports the widespread belief that applications constitute the "crown jewels" of the IS organization.

**Table 2: Relative Importance of IT Domains**

IT Domain	Relative Importance to Infrastructure	Relative Importance to Business
Application Dev.	41.5	49.6
Data Center	26.4	20.6
Telecoms/Network	32.1	29.8
Total	100%	100%

A greater level of outsourcing in application development is consistent with our view calling for outsourcing parts of activities than the entire operation. Is there a paradox that we observe greater levels of outsourcing in application development -- which is considered the most strategic aspect of IT? We do not believe so. It is

because we believe that every activity should be open to be *evaluated* for possible outsourcing. Indeed, the areas considered "strategic" should be assessed more systematically given their profound impact on the organization. Our argument here is consistent with recent calls for recognizing the potential benefits of outsourcing even in areas that may be historically (implicitly) classified as strategic.<sup>6</sup> No part of the IT infrastructure should be considered to be a "sacred cow" that must invariably be located inhouse irrespective of the costs and level of internal competences.

**Summary.** We see an increasing recognition that the role of the CIO implies not simply an elevation within the hierarchy, but a significant redefinition of responsibility to incorporate the IS function as an integral part of the business. This is compounded by the fact that there has been a steady increase in control exercised by the users as well as fundamental shifts in the characteristics of the technology architecture. Thus, an effective CIO is less similar to the "custodian of systems and networks" but is more akin to an astute business manager with specific responsibility for developing a distinct source of competitive advantage (similar to manufacturing, logistics, or marketing) through selective outsourcing involving both 'strategic' and 'operational' areas for demonstrating the specific source of value creation.

<sup>6</sup>See for instance, Venkatesan, R., "Strategic Sourcing: To Make or Not to Make," *Harvard Business Review*, November-December, 1992; Quinn, J.B., *Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry*. New York: The Free Press, 1992.

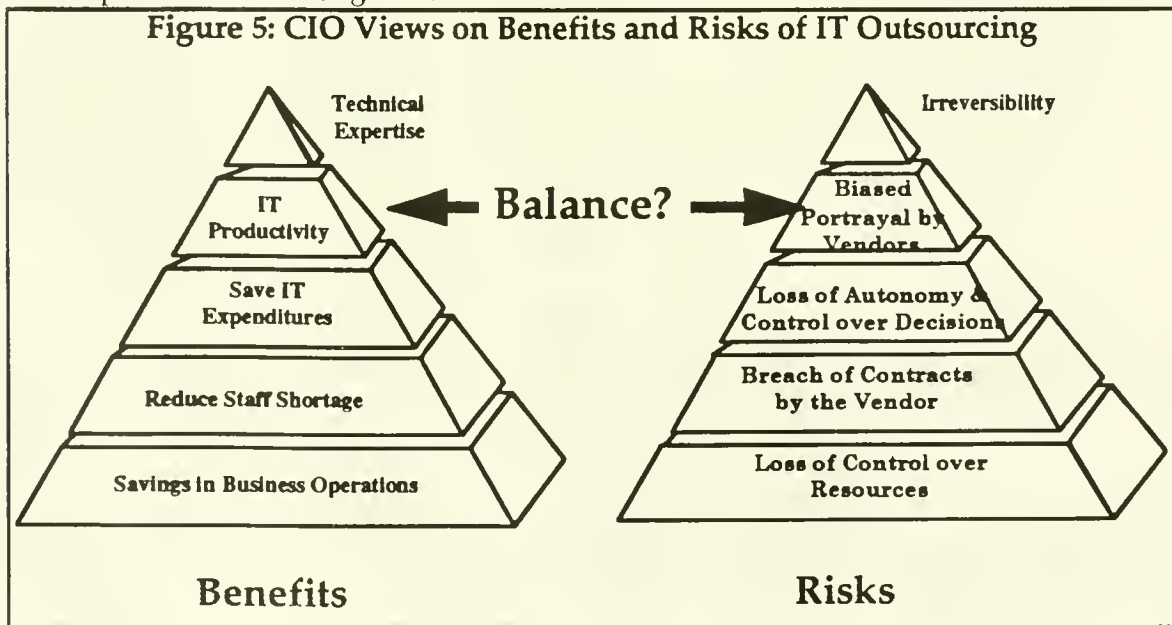
## PERSPECTIVES ON IT SOURCING

We contend that IT outsourcing is best viewed as a viable option for obtaining the required IT competences. Under this view, it is not a matter of selecting insourcing versus outsourcing but is instead a matter of deciding on a set of administrative mechanisms that are most appropriate for each business. Based on the three patterns of change in IT strategy, we identify a set of three perspectives on IT sourcing:

- Balance benefits and risks through a “portfolio” of relationships
- Articulate the allocation of decision rights
- Recognize the potential for enhancing shareholder value

### *Perspective One: Balance Benefits and Risks Through a “Portfolio” of Relationships*

Outsourcing has been proclaimed to confer a wide range of benefits. Indeed, the advantages of outsourcing have been aggressively extolled, on the one hand, by many vendors in their pursuit of new contracts. Several user organizations and consultants, on the other hand, are cautioning that outsourcing is not a “bed of roses” where a “handshake” solves all the problems. We examined the significance of benefits and risks of outsourcing as perceived by CIOs as well as managers responsible for our three specific domains (Figure 5).

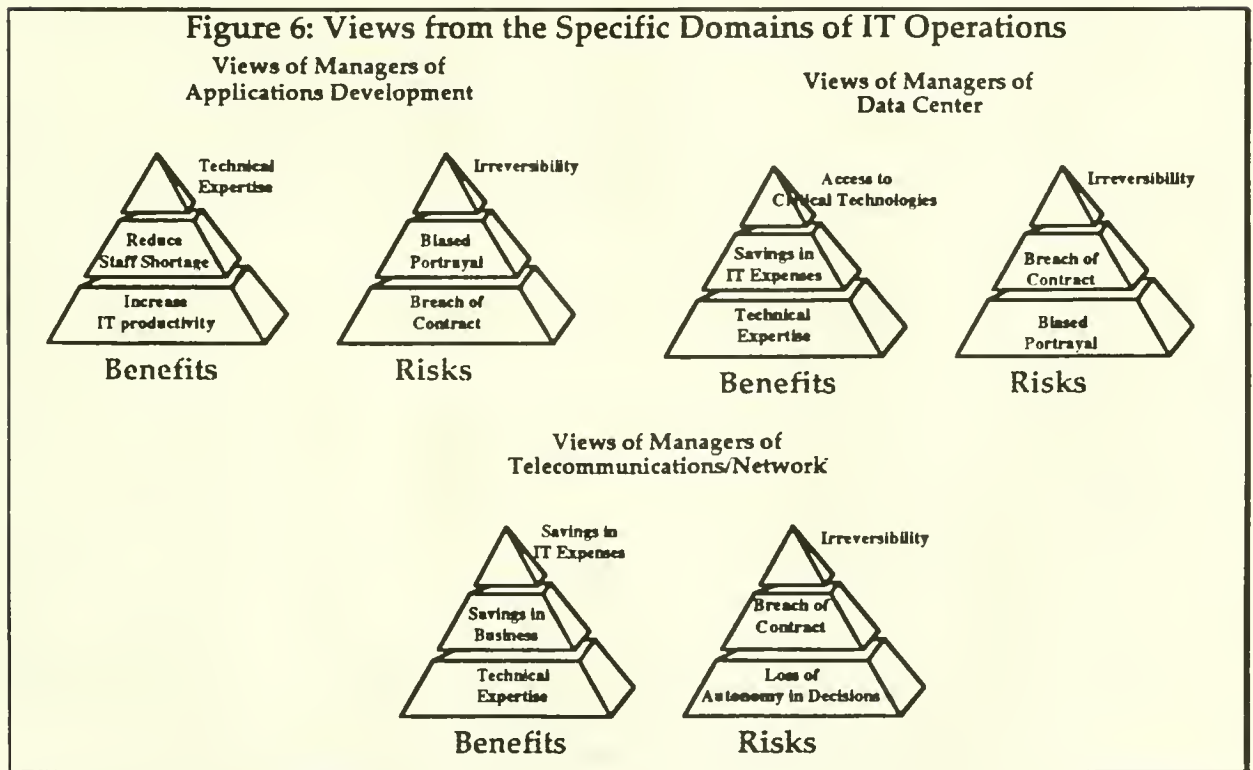


**CIO views.** The 159 CIOs in our study indicated that the key *benefits* of outsourcing relate primarily to the technical domain – “access to technical expertise” and “increase in IT productivity;” and secondarily to the business domain – “savings in

operating the entire business.” This indicates that as the complexity of IT increases (not only in terms of the technical domain but also in terms of the use of IT functionality), the exclusive reliance on internal organization as the source of competences may be limited.

At the same time, the CIOs recognized the inherent *risks*. The dominant risk appears to be the potential “irreversibility of the outsourcing decision.” There seems to be a strong feeling that handing out the “keys to the kingdom” would render it difficult to take the keys back; this is especially true in those longer-term arrangements. The other major risks include: “biased portrayal of benefits by vendors” and “loss of autonomy in decision-making.”

**Views from specific IT domains.** As shown in Figure 6, the results on outsourcing benefits and risks in the three specific IT domains are different. In application development, the emphasis is on the need for expertise and staff (such as programmers and analysts). In the data center, the need for critical technologies appears to take dominance; this is understandably due to the requirement for state-of-the-art hardware or software to obtain maximal operational efficiency. In telecommunications, the focus is on savings in IT expenditures given the pervasive use of communications technology throughout the entire enterprise. As for the risks, the results are consistent with the CIO. Irreversibility and potential loss of control in decision-making seem to dominate.



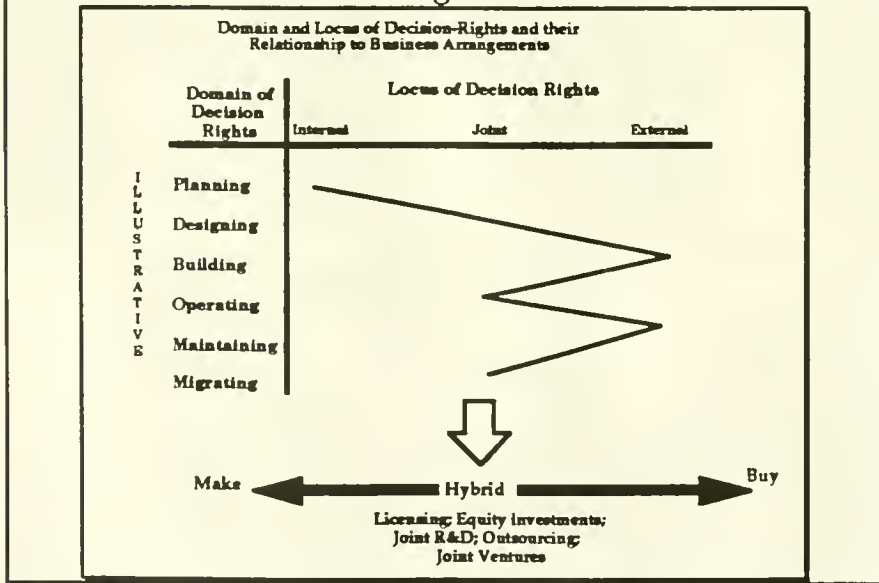
**Structuring a “portfolio” of relationships.** The *challenge* for the CIO as well as the managers in the specific IT domains, then, is: “how best to structure the business arrangement that balances the benefits and risks?” Our position is that the multi-year, *en masse* transfer of operations is only one type of arrangement. Each CIO (and the domain manager where appropriate) should evaluate a variety of possible

arrangements – short-term contracts with objective performance clauses in specific areas, technology-licensing, joint R&D, minority equity investments, etc. – and choose the set that *maximizes the benefits while minimizing the risks*. Such a portfolio of relationships would provide more maximal benefits in most cases than one-shot blanket arrangements with a single vendor. It also allows for the flexibility in modifying the arrangements with particular vendors as well as the participants in the network of relationships.

### Perspective Two: Articulate the Allocation of Decision Rights

Our view is that IT sourcing should never be viewed as discrete zero-one choices (i.e., insourcing versus outsourcing) which fail to recognize the continuum of possibilities between the polar ends. On the contrary, we suggest that the sourcing choices be more meaningfully framed in terms of “allocation of decision rights.” By decision rights, we refer to the authority to determine the use of specific forms of assets – technological and human – to achieve the specific goals of the user organization. For instance, if the user organization is interested in obtaining “contract labor” to operate the data-center, it may be possible to shift the locus of decision rights pertaining to human resources to external sources while retaining the locus of technological resources inside the user organization. Similarly, it may be possible to shift the locus of operational decision rights (e.g., installation, maintenance) while retaining strategic decision rights (e.g., architecture, platform). Within this view, the sourcing choice is essentially the articulation of the appropriate locus of decision rights between the user and the various vendors. In Figure 7, we provide a simple framework to illustrate the logical link between the allocation of decision rights and the type of business arrangements.

**Figure 7: An Illustrative Approach for Allocating Decision Rights**



Let us consider another example to illustrate the notion of allocation of decision rights: the purchase of a standard software package from the marketplace. We argue that this case does not fall within the umbrella of outsourcing since the decision rights to use the software and leverage benefits from the software rest inside the organization.

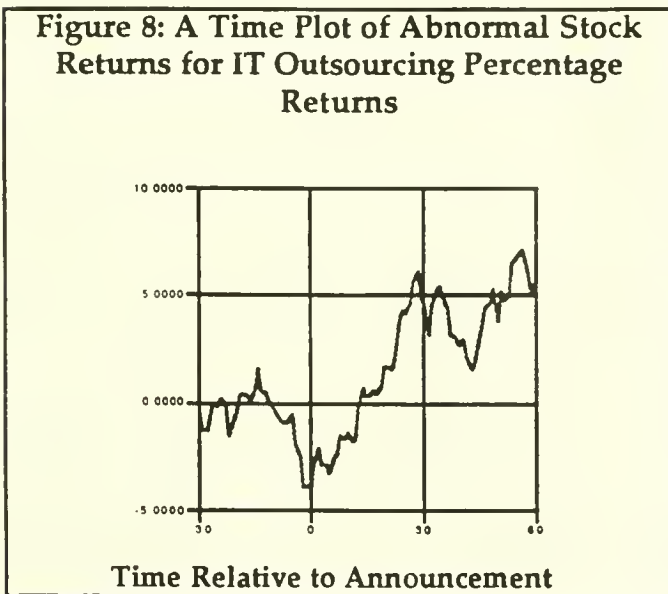
However, when a software is custom-developed to be in line with a particular context, there is potentially a greater degree of sharing of decision rights that balances the needs and requirements of the two parties involved. This situation qualifies as outsourcing. So, it is important and more appropriate to pose the following question: “what decision rights are being outsourced?” rather than “what activities are being outsourced?” By focusing on

decision rights, we are able to better understand the differential responsibilities, and more fundamentally, the ability to leverage the resources involved.

In our study, we observe a consistent pattern in the extent of outsourcing across distinct stages of the IT resource cycle: outsourcing is *low* in the design stage (i.e., architecture and platform decisions), *high* in the operations stage (i.e., installation, maintenance, and upgrading), and *low* in the monitoring stage (i.e., quality and cost control). This pattern is remarkably similar across all three domains. Thus, firms prefer to keep the strategic (or design) and appraisal (or monitoring) aspects of IT management inhouse and tend to outsource other tactical (or operations) aspects to external providers. While such a general distinction may be interesting, it is important that each firm explicitly delineates those decision rights that should be kept inside and those that could be allocated to external partners – either exclusively or on a joint-basis.

### **Perspective Three: Recognize the Potential for Enhancing Shareholder Value**

Outsourcing decisions aim to streamline the management of IT operations. However, the potential impact of IT decisions (including IT outsourcing) extends beyond IT performance and do influence business performance and firm value. In recent years, there has been increasing emphasis on considering the contribution of different spheres of corporate operations to the overall firm value as indicated by shareholder wealth.<sup>7</sup> It is then understandable that IT managers should be called upon to demonstrate the “value-added” of their activities.<sup>8</sup> Indeed, Kodak managers identified the possible enhancement of shareholder value as a prime impetus in their IT outsourcing decisions.<sup>9</sup>



As part of our research, we examined whether the stock market reacts positively to major IT outsourcing decisions.<sup>10</sup> We observed that shareholders -- on average -- placed a premium on IT outsourcing. Figure 8 shows the excess returns relative to a market index (Standard and Poor's 500) around the contract announcement dates. Our analysis also shows that these returns are more favorable when the outsourcing firm has a high business cost structure and low business performances. In other words, increases in market value tend to go along with outsourcing firms that already have unfavorable cost and performance positions --

<sup>7</sup> Stewart III, G.B., *The Quest for Value: A Guide for Senior Managers*. New York: HarperCollins Publishers, 1991.

<sup>8</sup> Continental Bank's outsourcing decision is partly due to the fact that the internal IT department was not perceived to be adding significant "value" to the business.

<sup>9</sup> Hovey, V., "Lessons from the Kodak Experience," Presentation at Symposium on *A New Perspective on Information Technology Strategy: From IT Outsourcing to IT Governance*, Cambridge, MA, November, 1992.

<sup>10</sup> Loh, L. and N. Venkatraman, "Stock Market Reaction to Information Technology Outsourcing: An Event Study," Center for Information Systems Research, MIT, CISR WP No. 246, November, 1992.

this signifies that investors expectations are that outsourcing could be more beneficial to firms under these circumstances.

Our view is that managers should assess the potential impact on shareholder wealth when evaluating the alternative sourcing options. While this may not be the only criterion, we suggest that a multitude of assessment criteria -- including stock market reaction -- should be considered.

**Summary.** Our perspective on IT outsourcing is rooted in our position that a "portfolio" of relationships that best balances the benefits and risks of inter-firm arrangements is the most appropriate. CIOs and the managers of the relevant domains should articulate their logic for such a portfolio and create an appropriate mechanism to identify the best set of partners and business arrangements as well as manage the ongoing relationships. It is also important that the potential impact of these inter-firm relationships on criteria other than IT effectiveness (namely: shareholder value) should be considered.

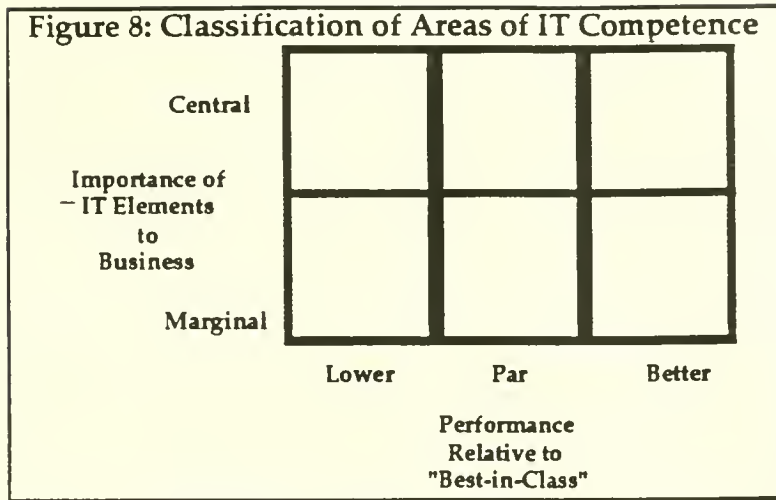
## PRESCRIPTIONS FOR IT SOURCING STRATEGY

**W**e offer a set of prescriptions for effective formulation and implementation of IT sourcing strategy. While it is important to recognize that there is no universal array of principles that is equally applicable to all organizations, we believe that these prescriptions would be valuable as guidelines for managers involved in making difficult decisions pertaining to IT sourcing strategy:

- Outsourcing options should be evaluated by every firm for each element of IT scope.
- Outsourcing involves selecting the "locus of IT governance"
- Outsourcing should be based on the IS organization as a value center

### ***Prescription One: Outsourcing Options Should be Evaluated by Every Firm for Each Element of IT Scope***

**O**utsourcing may appear to be more relevant for some firms than for others. In fact, it should be systematically considered by every firm. Some managers believe that the term "outsourcing" carries a negative connotation, implying perhaps that the internal operations are inefficient and ineffective, and hence should be outsourced to an external partner. Thus, it is not surprising to observe internal resistance by the managers seeking to "protect their turf" against outsourcing.



We believe that no single firm can be best along all relevant elements of IT scope. Some may excel in certain elements (example: efficient data center management) while they may be deficient in terms of new telecommunications capability. Others may operate a world-class application development domain but may be weaker in terms of leveraging emerging IT functionalities to redesign business operations. The management challenge for

each firm, then, is to evaluate the best way to combine various sources of "best-in-class" competences. Thus, outsourcing is not the last option; nor is it the first.

Our suggestion is that every firm should create the climate to assess the capability of their internal operations against the relevant set of "best in class" providers. Such assessments -- when properly carried out -- might well indicate that the inhouse operations are as effective along relevant major criteria leading to internal mode of sourcing as in the case of Navistar.<sup>11</sup> More importantly, given our earlier suggestion in favor of a portfolio of relationships, such assessments should focus on distinct elements assessed against relevant "best in class" performance.

Outsourcing should be best carried out as part of IT strategy formulation (aligned with business strategy formulation and implementation) and not in response to a crisis -- be it internal or external. When IT outsourcing is viewed as the search for the best possible approach to obtain and leverage IT competences, it does not have a negative connotation. Indeed the formulation of a portfolio of relationships across different elements of IT competences provides the required capabilities to create distinctive IT-based business advantage beyond operational cost savings.

Figure 8 is a suggested classificatory scheme for each firm to position their set of IT elements along two dimensions: Importance of IT elements to the business operations (at present and in the future), and the performance level relative to "best-in-class." The distribution of these elements of IT scope (and competences) within this matrix provides an excellent starting point for further assessments.

### **Prescription Two: Outsourcing Involves Selecting the "Locus of IT Governance"**

In the words of the vice president for computerized productivity at Martin-Marietta: "If you think that you can get rid of your problems by throwing them over the wall to some vendor, someone is going to eat your lunch." We could not over-emphasize this

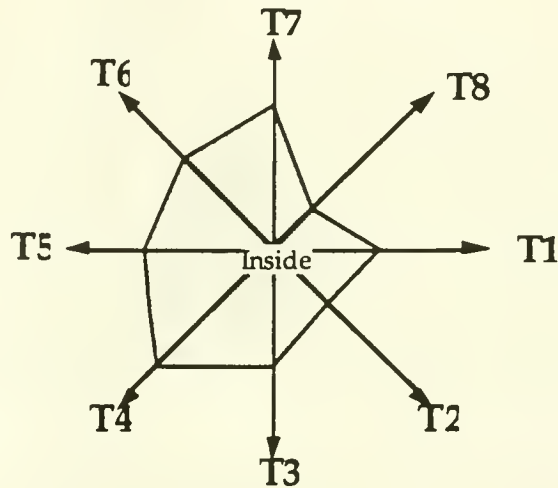
<sup>11</sup> Aucoin, P., *Internalizing the Vendor's Resources: Outsourcing in the 1990s*. Carrollton, TX: Chantico Publishing Co., 1991.

view. It is myopic to view outsourcing as a "quick fix" to solve current problems within the IT domain or in the business domain.

The biggest misconception is that you can shift the responsibility for IT activity to someone outside the organization through outsourcing. We urge that managers explicitly recognize that it is possible to outsource the authority to operate the IT infrastructure but it is not possible to outsource the responsibility. Someone within the outsourcing firm is ultimately responsible for the performance of IT operations -- although it may be carried out by managers not in the payroll.

Once we move beyond the view of outsourcing as burden shifting, it becomes easier to adopt the view of outsourcing as selecting the locus of governance for obtaining each element of IT scope with the required competences to support its current strategy as well as shape its potential new strategy. For most organization, this locus is neither fully inhouse nor is it completely left to the marketplace. So, the challenge is to select the best location within the continuum from internal development to external marketplace. More importantly, since such a locus is not static on a single dimension of IT competence, a portfolio approach to obtaining these competences is the most appropriate.

**Figure 9: A Schematic Representation of the Locus of IT Governance**



T1 through T8 represent eight elements of IT Scope; the position on each axis represents the governance mode (inside to outside) to obtain the required level of competence. The overall shape is a representation of the locus of IT governance.

### Locus of IT Governance.

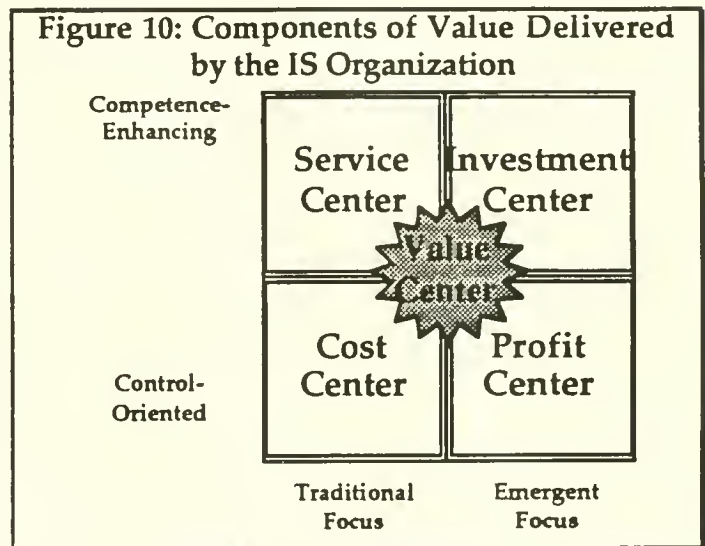
Figure 9 is a schematic representation of the locus of IT governance across eight (illustrative) distinct elements of IT scope. More important than the final shape are the underlying analytical steps and the firm-specific rationale supporting the choice. Further, this representation is not static and should be adapted on a continuous basis in order that the required IT competences to support current and future business strategy can be nurtured. An important management challenge is the development of an administrative process to formulate and implement this locus of IT governance on a dynamic basis.



### Prescription Three: Outsourcing Should Be Based on the IS Organization as a Value Center

Outsourcing should be viewed in terms broader than cost savings. Even though cost levels are very important, the potential of a portfolio of relationships is more than simply streamlining the cost structure of current IT operations. This is particularly important given the pace of technological change whereby efficiently operating an obsolete IT platform may not provide the businesses with the required sources of competitive advantage.

We believe that the "value" delivered by an IS organization should be viewed as an integrated whole in terms of four components: *service center*; *cost center*; *investment center*, and *profit center* (as shown in Figure 10). This, we propose, would entail the positioning of the IS organization as a "value center." We observe that most organizations currently see benefits from IT outsourcing along cost considerations ("we will be able to bring our costs in line through outsourcing") and/or service considerations ("we will be able to deliver better service through outsourcing"). These are worthwhile considerations but they fail to address the full range of possibilities from outsourcing viewed more generally as value-added inter-firm arrangements to obtain competences.



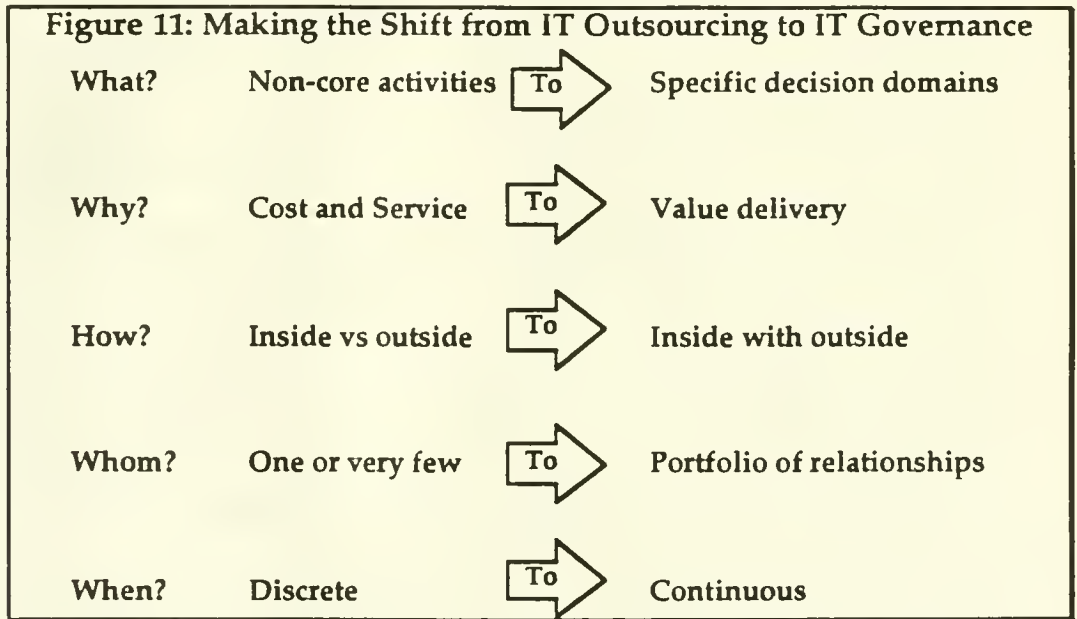
Our framework highlights that it is equally (if not more) important to consider outsourcing as providing benefits reflecting profit center considerations ("what additional external revenue streams can be exploited through IT outsourcing?") as well as investment center considerations ("what new and/or emerging IT-based competences could be obtained to support and shape my business strategy?"). BancOne of Ohio, in their outsourcing arrangement with Andersen Consulting, sought to develop products and services that could be offered to "non-competing" businesses. Similarly, several firms -- Continental Airlines, General Electric, and others -- are incorporating possibilities that would allow them to leverage emerging functionalities as part of the outsourcing agreements.

We expect that innovative firms would view IT outsourcing as incorporating all four components -- with differing levels of relative importance. As a CIO in our survey articulated a nearly integrated vision for the IS organization: "It must deliver cost competitive services and provide the best return possible for each IT dollar." When outsourcing is positioned as addressing all four components simultaneously, we believe that it would not have such a negative connotation. More importantly, it serves to create a more direct value-rooted link between IT strategy and business strategy.

## CONCLUDING OBSERVATIONS: EFFECTIVE MANAGEMENT IS MORE THAN OUTSOURCING

In conclusion, we reiterate our main thesis that effective management of the IS function is more than outsourcing. Effective IS management, we believe, entails a totally new managerial mindset that focuses fundamentally on the set of relationships as a lever for value extraction from IT competences. We term this new approach, "IT Governance" reflecting a wide range of structural options -- both within the user organization as well as involving a range of external providers -- to obtain and leverage IT competences.

In Figure 11 we summarize why the traditional views on "outsourcing" may be limited, myopic and dysfunctional. The alternative view of IT governance is more comprehensive, flexible, and has a longer-term view which should guide management thinking and decisions pertaining to this important area of business.



First, we have argued in this report that we should modify the traditional view which advocates that only "non-core" activities should be outsourced (or managed in inter-firm relationships); instead, we should adopt a view that every element of IT scope should be assessed for its "best" locus of competence along the inside/outside continuum. If it could be potentially conducted outside, then the next step is to identify the specific decision rights that should be retained inside or shifted outside.

Second, we have observed that expectation of improvements in cost and service levels as the primary reasons for IT outsourcing should be replaced by one that adopts a four-component model of value from IT-related alliances: cost, service, profit, and investment. To the extent that the portfolio of relationships addresses and balances these four components, we could conclude that the firm has adopted an effective IT sourcing strategy.

Third, there is a widespread belief that outsourcing and insourcing are competing alternatives reflecting an 'either/or' position. Most cases that we looked at have adopted such a notion. Our view is that this need not (and should not) be the case. The

challenge is to select the locus of IT competence (as illustrated in Figure 9) that reflects all the four components of IT value (Figure 10) and to implement it with the best set of structural options – both inside and outside.

Fourth, outsourcing has typically meant identifying one or two dominant vendors who will perform the required tasks on a massive scale for a long period of time (multi-year, multi-million dollar deals). Our view is that while such a structural alternative is certainly attractive under certain conditions, it is by no means the only option. A more powerful approach calls for devising logic for combining internal and external competences, and adapting this logic over time.

Fifth, while outsourcing may be viewed as a discrete decision (i.e., deciding at one point in time to shift from an internal mode to an external mode), IT governance recognizes that these decisions are taken continuously. Effective IT sourcing strategy calls for managing the “portfolio” of relationships as a critical lever of IT competences, and consequently the business competences.

In closing, we hope that this executive report has contributed modestly to clarifying some of the complex issues underlying IT sourcing – which has recently emerged as an important element of IT strategy. Given its strategic importance, IT governance cannot be reduced to a set of recipes that can be systematically followed; hence, we have not attempted to offer a set of “cookbook-type guidelines.” On the other hand, we have discussed a set of critical patterns of change in IT strategy, emerging perspectives on IT sourcing, as well as a set of prescriptions as guidelines. We hope this report is useful and illuminating for both IT and business managers.

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## About the Researchers

**Professor N. Venkatraman** is an Associate Professor of Management at the MIT Sloan School of Management. He received his Ph.D. from the University of Pittsburgh and his doctoral thesis was awarded the 1986 *A.T. Kearney Award for Outstanding Research in General Management* by the Academy of Management. His current research projects focus on the causes and effects of information technology (IT) governance, with particular emphasis on IT sourcing. In addition, he has spearheaded a multi-year, multi-industry research project on electronic integration, namely: the use of IT functionality to restructure interorganizational business relationships. His research has appeared in *Academy of Management Journal*, *Academy of Management Review*, *Information Systems Research*, *Journal of Management Information Systems*, *Management Science*, *Sloan Management Review*, and *Strategic Management Journal*. He contributed an influential chapter on IT-enabled business reconfiguration for the MIT Research Project, *Management in the 1990s* and has co-authored the lead-article for the 1993 Special Issue of the *IBM Systems Journal* on Strategic Alignment. His professional areas of research, teaching, and consulting intersect information technology and strategic management.

**Dr. Lawrence Loh** recently completed a Ph.D. at MIT's Sloan School where he submitted a doctoral dissertation on the theme of information technology sourcing. His main research interests lie in the interface of management information systems and strategic management. His works have been published or are forthcoming in academic journals such as *Management Science*, *Information Systems Research*, and *Journal of Management Information Systems*. He has also presented his research at several professional conferences including the Academy of Management Annual Meetings and TIMS/ORSA National Meetings. In June 1993, he will be returning to the Faculty of Business Administration at the National University of Singapore.

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