

The Decision to Outsource Information Systems Functions

Outsourcing of IS functions refers to the practice of turning over part or all of an organization's IS functions to one or more external service providers. Such outsourcing could involve the outsourcing of human resources (managers, programmers, analysts, technical specialists, etc.), or technological resources (hardware, software, technology platform, etc.) or different degrees of both. Information Technology (IT) outsourcing is proliferating, especially after Eastman Kodak handed over its entire data center, network, and microcomputer operations to third parties about four years ago. This deal was well publicized, along with those of other companies like General Dynamics, American Standard, Copperweld and Dial. In fact, according to Input Corporation of Vienna, Virginia, the outsourcing market is expected to jump from \$10 billion in 1991 to about \$ 27 billion in 1997. These numbers provide undeniable testimony to the growing significance of IT outsourcing and the need for corporations to proactively make and manage their outsourcing decisions.

Interestingly, the phenomenon of outsourcing is far from new. Traditionally, outsourcing was practiced by smaller companies as a way to obtain IS services that were not feasible internally. Also, certain industries (like thrift institutions) have long purchased time-sharing and facilities management services. Time-sharing services allow companies to utilize the precious computer time through machines owned by the external provider. Facilities management type arrangements allow external providers to manage the computing facilities located within the premises of the service receiver. In the first case the technology itself is outsourced, while in the second personnel are outsourced. However, in both cases the services provided were generic, typical of the data processing days of the IS function.

Today's IS environment is much more complex. Outsourcing is growing, partially in response to some of the highly publicized cases discussed above, and partially because corporations are looking for ways to simplify their IS environment. Today, even larger companies with mature IS departments are outsourcing in their efforts to focus their resources on high value added activities. We are also seeing much more complex outsourcing arrangements that involve both resources and personnel. Functional outsourcing provides orga-

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nizations the flexibility to choose specific IS functions they wish to outsource. These could include traditional functions like application development and systems operations, newer functions like information center operations and telecommunications management, or even managerial functions like system management, planning and integration. Such functional outsourcing is a result of a highly competitive vendor environment. Vendors are specializing on the basis of industry expertise (e.g., banking), technology expertise (e.g., client/server) and breadth of services (e.g., from systems development to operations). Service quality and partnership are the themes being emphasized rather than the mere purchase of a commodity.

For corporations to effectively function in such an environment, they need to shift their focus from technology per se to information utilization and management. Rather than spend the time and resources building an internal computing infrastructure, organizations should focus on matching their needs with the technology so that they can improve corporate effectiveness. The decision to outsource IT should therefore be taken proactively after careful evaluation of all advantages and disadvantages, within the context of the organization. In other words, such decisions should not be based solely on single factors that appear to predominate at the time, such as a reaction to a competitor, a response to a temporal down cycle in the economy, or a need to retain control over the IT infrastructure. The following discussion provides practical insight into the outsourcing decision and highlights the significant factors that need to be systematically considered.

Making Outsourcing Decisions

Too often, outsourcing decisions are based exclusively on a single motivating factor (e.g., cost). However, since outsourcing presents an alternative way of providing IS services, it can be more or less attractive depending on the company's unique needs and circumstances. A rational decision to outsource is therefore contingent upon careful examination of these needs. Two levels of analysis are presented for each outsourcing decision. The first or "system" level of analysis looks at the IT system being considered for outsourcing and makes a general recommendation of go/no-go. To re-evaluate affirmative, marginal, and negative responses from this level, level 2 analysis provides a set

of specific questions that evaluate the "impact" of outsourcing the system on the firm. It is important to note that the term "IT system" is used throughout to represent individual hardware, software, or IT-related service that can be individually or collectively (multiple systems) outsourced.

Level 1 Analysis (System Level)

Figure 1 provides a decision tree to guide a decision-maker through level 1 analysis. Three fundamental issues are raised in this analysis:

1. What is the maturity of the IT system being outsourced?

To evaluate this question, decision-makers should carefully examine the IT system and the underlying technology being considered for outsourcing. Is it in its early stages (initiation) where few organizations are utilizing it, or is it in a growth stage where corporations are rapidly attempting to use it, or has it been around for some time and the learning is complete (mature)? It is recommended that this examination be conducted across industry boundaries. With such boundaries getting softer due to the ease of information transfer, it is more appropriate to examine this question in as holistic a manner as possible.

2. What is the significance of this system to your firm/competitive advantage?

This question gets to the root of the notion of "strategic systems." In other words, is the system being considered for outsourcing in any way signif-

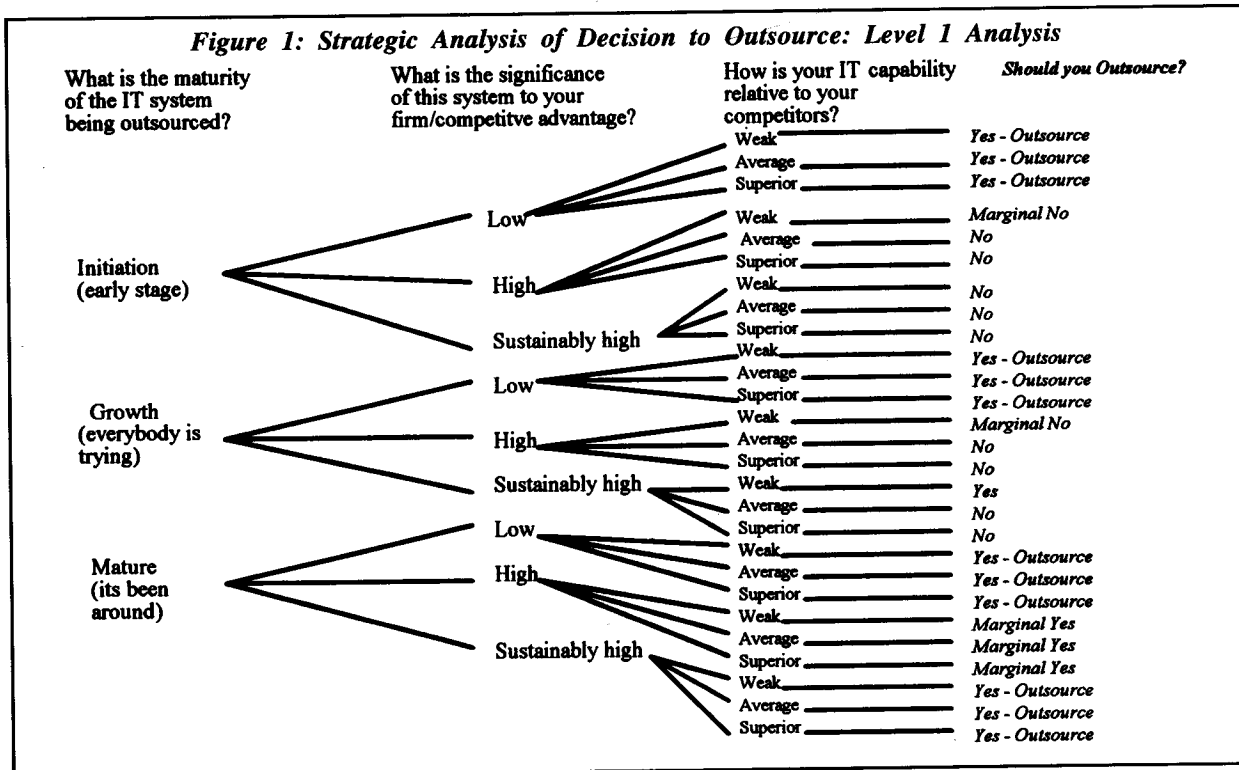
icant to the firm and its objectives. In responding to this question, both the short and the long run must be considered. This might involve forecasting of those technologies that have the potential to provide sustained competitive advantage in the future (sustainably high).

3. How is your IT capability with respect to your competitors?

A rigorous evaluation of the firm's IT position vis-a-vis that of the competition is necessary to respond to this question. The scope should not be restricted to only the system being considered but should be broader in order to assess exploitability of IT.

Yes - Outsource

Technologies or systems that are not yet mature are still in the early stage and in general should only be outsourced if they are not important to the firm or the firm does not have the capability to exploit them. If the system is not of significant importance to the firm, it might be more appropriate to exploit economies of scale or scope through a service provider. Doing so could allow a firm to utilize its resources on higher value-added activities. Also, in cases where the firm does not have the expertise or infrastructure to take advantage of technologies, it is more appropriate to outsource them. To develop capabilities in-house under these conditions, especially given the dynamic technological environment, might be a recipe for disaster. In cases where the system is important to the firm's



future (sustainably high) and is widely prevalent (mature), exploitation is not a major issue and it might be beneficial to develop and build relationships with suppliers through outsourcing.

Marginal Decisions

Marginal decisions come about when the fundamental premise of one question contradicts that of another. Firms should be marginally inclined not to outsource when the system is not mature and of high importance but the firm's IT capability is weak. In such cases it is important to retain control over important systems that competitors have not yet exploited. The decision is marginal because, on one hand, the system is important and needs to be available and under control of the firm. On the other hand, the firm's capability to develop the system in-house is weak, and outsourcing might provide quicker access to this important/newer IT system.

Firms should be marginally inclined to outsource systems which are mature and important to the firm. If the system is mature in another industry, it might be beneficial to outsource and gain first access to the supplier within the firm's industry.

No - Don't Outsource

Information technologies and systems that are in the early stages of growth and are important to the firm should be nurtured in-house. By investing in these systems, a firm can pre-empt competition through its ability to access and control proprietary technology. The exception to this is in cases where the firm's capabilities are poor relative to the competition, in which case obtaining the system, albeit through outsourcing, becomes the imperative.

By going through Level 1 analysis, a firm can come to an informed choice based on strategic and technological considerations as opposed to only cost considerations that typify many such decisions. To illustrate Level 1 analysis, take the case of a firm that wishes to change over to client/server technology. On cross-industry analysis the firm concludes that these IT systems are "hot" and are in the growth stage. They also evaluate client/server technologies and distributed computing to be pivotal to their distributed warehousing structure in the future. They assess their IT capabilities as among the best in their industry. In this case, they would conclude from Level 1 analysis that it might be more appropriate to develop client/server architectures in-house (perhaps with the help of an external consultant). In the case of a more mature technology/system decision, like an accounts payable application system or a leased communication line, Level 1 analysis would push them toward outsourcing (since the systems are prevalent and external competency is readily accessible).

Level 2 (impact) analysis poses a series of questions that can crystallize the choice made (especially the

marginal cases) in Level 1. While Level 1 makes the decision based on the IT system being outsourced, Level 2 examines the impact of the outsourcing decision. It is possible that Level 1 analysis suggests "outsource" while Level 2 analysis indicates a negative impact of outsourcing. In such cases, the original decision might need to be re-examined.

Level 2 Analysis (Impact Level)

Figure 2 (on page 38) lists seven mutually exclusive questions that need to be studied for both problems and benefits associated with outsourcing. Our experience has determined that it is reasonable to assume that these questions are equally important. The questions are elaborated below and provide a foundation for the outsourcing decision analysis. A 7-point scaled response to each question ranging from a "strong yes" to "strong no" allows a computation for the summed score of benefits/problems. The score of positive (outsource) and negative (do not outsource) should be evaluated in conjunction with Level 1 analysis.

BENEFITS

Will the outsourcing of the IT system allow you to focus on your core business competencies?

Outsourcing might allow firms to refocus their business efforts towards higher level business issues and away from issues such as information center management and hardware acquisition. Such insulation from the increasingly complex IS environment could facilitate better utilization of resources.

Will the outsourcing of the IT system allow you to redirect attention on IT activities that promote competitiveness (strategic IT)?

Outsourcing could allow management to focus available IS talent on IT activities that promote competitiveness, rather than spending time on the routine activities of systems maintenance or operations. These are becoming a strategic necessity in this era of time-based competition.

Will the outsourcing decision allow you to take advantage of the competence of one or more service providers as opposed to internalizing this competence?

Outsourcing could provide an avenue for the service receiver to leverage the competence of one or more service providers without internalizing all the required competence. This is especially true in cases of mature technologies or which foster a competitive vendor environment.

Does the outsourcing of the IT system allow you to transfer the problem of training and managing IT personnel to the service provider?

Due to the specialized nature of IT, the staffing of qualified personnel is a critical problem especially in times of significant technological change. Out-

sourcing could allow the service receiver to transfer this problem to the service provider who might be in a better position to select, train and manage IT personnel.

Will the outsourcing of the IT system allow you to exploit the economies of scale and scope of the service provider?

An outsourcing service provider can exploit economies of scale in the areas of hardware, software, and staff, since it pools projects from many service receivers. Similarly, the fact that a service provider is able to exploit economies of scope by carrying out a variety of IT tasks is a capability that may not be available to any single service receiver.

Will outsourcing of the IT system allow you an unambiguous approach to manage costs?

With the escalating levels of IT investments, there are increasing pressures to control the costs of IT operations. Outsourcing provides an unambiguous approach to arriving at a detailed cost structure of IT operations. The costs become predictable for the service receiver since the responsibility of cost overruns is often placed on the service provider.

Will outsourcing of the IT system facilitate your access and use of certain technologies?

Outsourcing allows the service receiver to gain immediate access to otherwise difficult to access information technologies. Such access might increase the receiver's competitiveness in delivering products or services.

PROBLEMS

Do you risk obsolescence by outsourcing the IT system?

Accelerated changes in the IT environment make the risk of obsolescence high. Outsourcing might move control of the obsolescence to the service provider, putting the service receiver at risk.

Do you lose flexibility through outsourcing of the IT system?

Removing the IT system from the firm's premises might result in delays and reduced responsiveness to organizational needs and mandates. This lack of flexibility could be critical to the firm's competitive position depending on the importance of the system.

Do you lose control through outsourcing of the IT system?

From the point of view of the service receiver, outsourcing reduces their real control over both the quality of software and the timetable of a project since the work is now being carried out by people not under their supervision.

Does outsourcing of the IT system threaten the job security of your personnel?

With outsourcing, the service receiver is often confronted with the likelihood that many IS professionals will not find suitable jobs or promising career paths in other areas of the corporation. In fact, addressing the personnel displacement caused by outsourcing might discourage many IS executives from evaluating options objectively. The problem could be alleviated with retraining programs or absorption of displaced personnel into the payroll of the service provider.

Does outsourcing the IT system significantly increase your costs of negotiating and monitoring the enforcement of the contract with the service provider?

The outsourcing approach may require increasing amounts of time to communicate and coordinate with the service provider. The costs of negotiating and monitoring the outsourcing contract (including legal costs) with the service provider are potentially wide ranging, indirect, and substantial.

Does outsourcing of the IT system affect your security of data or systems?

Since the service provider offers a customized but similar system for multiple service receivers, some who might be direct competitors, concern over data security might adversely affect the decision to outsource for certain systems.

Does your service provider look out for your best interests?

It should always be kept in mind that all service providers are in the business to maximize their profit, which could run counter to a service receiver's interests (for instance, in cutting costs).

The score obtained through careful Level 2 analysis provides insight into the impact of outsourcing a particular IT system. Individual corporations might weight the questions in Level 2 as deemed appropriate for their own circumstances. Collectively, the process of going through both levels of analysis might facilitate debate and introspection that is more valuable than the decision itself.

Conclusion

With the increasing attention being paid to IT outsourcing, it is critical that organizations carefully evaluate the outsourcing decision. Unlike traditional outsourcing, today the variety of vendors and services make it possible to effectively piece-meal outsourcing. Often, however, the major motivation for these decisions has been cost. This paper presents a more comprehensive approach to the outsourcing decision. By evaluating IT systems at the system and impact levels of analysis, we can come to a more informed decision rather than jumping on the "outsourcing is for everyone" bandwagon. While the method is by no means infallible, it



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provides a structured platform on which to base a decision which is only going to grow in importance. •••

Additional Readings

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Figure 2: Strategic Analysis of Decision to Outsource:
Level 2 Analysis

Benefits

Business - Will the outsourcing of the IT system allow you to focus on your core business competencies?

Competitiveness - Will the outsourcing of the IT system allow you to redirect attention on IT activities that promote competitiveness (strategic IT)?

Competence - Will the outsourcing decision allow you to take advantage of the competence of one or more service providers as opposed to internalizing this competence?

Personnel - Does the outsourcing of the IT system allow you to transfer the problem of training and managing IT personnel to the service provider?

Economies - Will the outsourcing of the IT system allow you to exploit the economies of scale and scope of the service provider?

Costs - Will outsourcing of the IT system allow you an unambiguous approach to manage costs?

Technologies - Will outsourcing of the IT system facilitate your access and use of leading edge technologies?

Problems

Risk - Do you risk obsolescence by outsourcing the IT system?

Flexibility - Do you lose flexibility through outsourcing of the IT system?

Control - Do you lose control through outsourcing of the IT system?

Jobs - Does outsourcing of the IT system threaten the job security of your personnel?

Contract - Does outsourcing of the IT system significantly increase your costs of negotiating and monitoring the enforcement of the contract with the service provider?

Security - Does outsourcing of the IT system affect your security of data or systems?

Interest - Does your service provider look out for your best interests?