Managing IT outsourcing: a value-driven approach to outsourcing using application service providers

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Keywords

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Abstract

Organizations, both large and small, are increasingly outsourcing their applications to application service providers (ASPs) for a variety of reasons such as cost reduction, shortened time-to-market, lack of internal expertise, and risk reduction. However, the adoption of the ASP model has not been smooth sailing for many organizations, and only a few organizations have a formal approach to making ASP outsourcing decisions. Partially to fill this void, develops a value-driven approach to outsourcing using ASP based on outsourcing theories and the industry's best practices. The value-driven approach is an adaptation and extension of Simon's decision-making process. It is designed to guide IS managers systematically through the complex process of identifying outsourcing opportunities, evaluating the viability of using the ASP model, making outsourcing decisions, managing contractual and implementation issues, and assessing the service quality of ASP vendors. Provides important implications for research and practice. For researchers, identifies ample research opportunities in this new field. For practitioners, the value-driven approach gives them an invaluable tool to manage today's complex information technology outsourcing.

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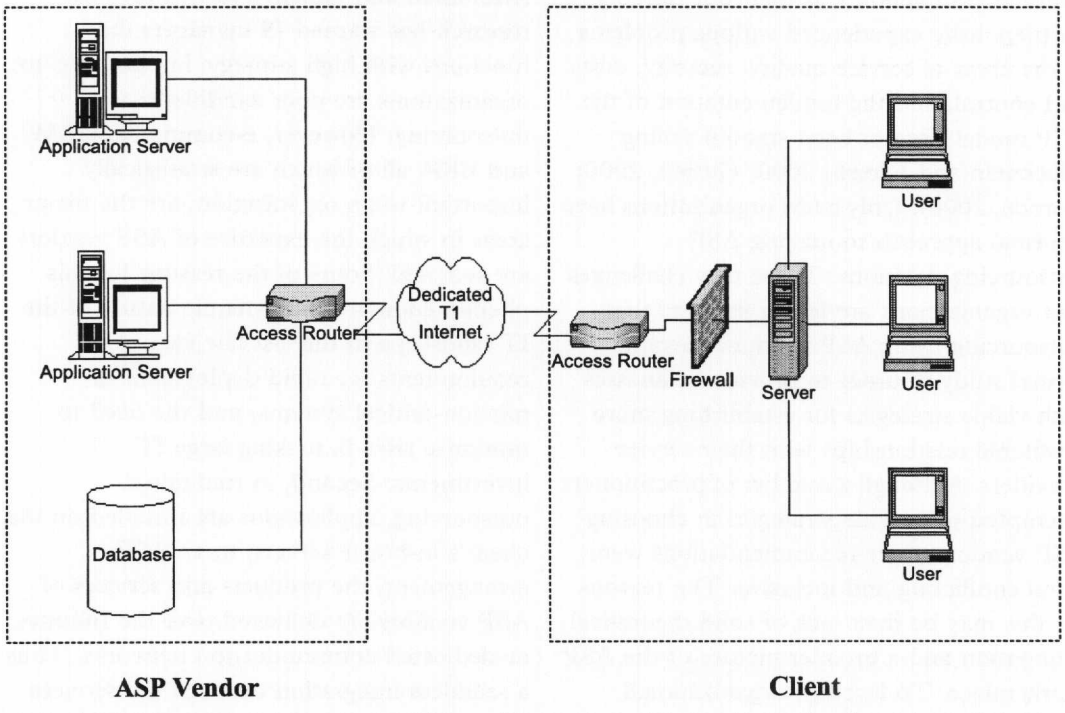
Introduction

In the current dynamic business and technological environment, it is imperative for organizations to stay competitive through the use of new information technologies (IT) and tools. However, the development and maintenance of these new technological infrastructures are both costly and time-consuming (Holohan, 2000). The shortage in the IT labor market is also putting pressure on organizations, which are aggressively expanding their technological infrastructure. The increasing popularity of enterprise resource planning (ERP) and e-commerce technologies in the last few years is presenting new challenges to the IT departments. While the businesses are eager to take advantage of these new technologies to create new business value and stay competitive, IT departments are finding it more and more difficult to manage the increasing number of new technologies effectively. Given the limited internal resources, outsourcing applications have become a viable option. As McFarlan and Nolan (1995) predicted, organizations are increasingly dependent on outside expertise to provide and maintain organizational data-processing resources. Delivering information services over the Internet, application service providers (ASPs) have become the answer to many organizations when it comes to outsourcing applications.

The growth of the Internet and its acceptance among both organizations and end users have paved the way to the rise of ASP vendors. Coffman (2000) defines ASP vendors as companies that "deliver and manage applications and computer services from remote data centers to multiple users via the Internet." A general ASP model of IT service delivery is depicted in Figure 1. ASP vendors provide a host of services to a wide range of industries. The major service categories dominating the ASP market include business application hosting, ERP, e-commerce, customer relationship management (CRM), supply chain management (SCM), digital content storage, and wireless applications (Butler, 2000; Cox, 2000; Holohan, 2000; Pappalardo, 2000). ASP vendors make these applications available to be accessed by their clients via the Internet or the dedicated communication networks. The ASP service delivery model

Figure 1 A general model of an application service provider



allows ASP vendors to reduce the cost of services through the economy of scale and, at the same time, the valuable resources of the ASP clients can be freed up to focus on their core competencies (Dilger, 2000).

The ASP model has numerous advantages over the traditional internal IT service delivery mode. Outsourcing applications eliminates, to a great extent, the money and time involved in purchasing, installing, upgrading, and maintaining hardware and software (Grandinetti, 2000). The ASP model also ensures that the client has access to the technical expertise that is too costly to employ in-house with a fraction of the costs at any time. In addition to the reduction in support costs, organizations are able to avoid new investments in hardware and software that might become out-dated quickly (Reed, 2000). Instead of investing in costly and complex servers, organizations now can have access to necessary business applications through less expensive computer terminals or "thin clients". The ASP model also provides organizations with faster and cheaper upgrades when the existing software and hardware become obsolete. More importantly, it reduces time-to-market despite internal IT limitations (Booker, 2000a). Furthermore, utilizing the Internet as an application platform facilitates the deployment of new systems in response to market changes and allows the application to be accessed from anywhere using a wide range of devices (Beale and Lindquist, 2000; Dewire, 2000). Finally, ASP vendors provide organizations with the scalability they need to meet business growth, while maintaining their focus on their core competencies (Curtis and Alphonso, 2000).

Initially, the target market for ASP services is small and mid-sized businesses (Wexler, 2000). Companies in these categories in particular need to utilize their limited resources to focus on their core competences. Today, many ASP vendors are servicing large companies as well. A recent survey shows that 65 percent and 72 percent of large enterprises plan to use ASP services for their internal applications and e-commerce applications, respectively (Wittmann, 2000). According to Gartner Group, the ASP market will reach $25 billion by 2004 compared with $3.5 billion in the year 2000 (*Fortune*, 2001). The services of ASPs are being utilized by a wide range of industries including manufacturing, banking, health care and transportation, whose information systems play vital roles in their competitive advantages (Basso, 2000; Booker, 2000b; Gurin, 2000; *Health Management Technology*, 2000). It is evident that outsourcing using ASP vendors will soon become a mainstream solution in the corporate IT environment.

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Nevertheless, many of the companies that adopted ASP vendors as their outsourcing partners have experienced various problems in the areas of service quality, security, costs and control, and the implementation of the ASP model has not been smooth sailing (Beckman and Hirsch, 2000; Gittlen, 2000; Torode, 2000). Only a few organizations have a formal approach to making ASP outsourcing decisions. These new challenges that organizations are facing indicate that outsourcing using ASP vendors warrants formal study in order to provide businesses with viable strategies for establishing more profitable relationships with their service providers. Although a number of practitioners attempted to provide strategies in choosing ASP vendors, their recommendations were often conflicting and inclusive. The reasons for this may be their lack of solid theoretical foundation and a broader picture of the ASP marketplace. To leverage organizational resources better, a formal approach to making ASP outsourcing decisions is imperative. Instead of focusing solely on costs, the approach should focus on seeking solutions that will provide organizations with the greatest overall value. While ASP vendors are different from the traditional outsourcing services, the fundamental theories and research findings in traditional outsourcing can still be borrowed to guide the research in this area. Based on these theories and the industry's best practices, this study proposes a value-driven approach to outsourcing using ASP. The approach is designed to guide IS managers systematically through the complex process of identifying outsourcing opportunities, evaluating the viability of using ASP services, making outsourcing decisions, managing contractual and implementation issues, and assessing the service quality of ASP vendors.

ASP vs traditional outsourcing

In looking at the phenomenon, we find it useful to understand the fundamental differences between the ASP model and traditional outsourcing. The differences lie in two main areas. First, the allocation of ASP revenues shows a clear demand for e-commerce, CRM, and ERP applications (Dilger, 2000). Traditional IT outsourcing often focuses on the areas of software development and IT operational activities (McFarlan and Nolan, 1995). Previous research has warned IS managers that functions with high strategic implications to organizations are poor candidates for outsourcing. However, e-commerce, CRM, and ERP, all of which are strategically important to an organization, are the major areas in which the expertise of ASP vendors are solicited. Some of the reasons for this phenomenon are the dynamic nature of the IT landscape in the last few years, the requirements for rapid deployment of mission-critical systems, and the need to minimize risks in making large IT investments. Second, in traditional outsourcing, applications are installed on the client's in-house servers; in an ASP arrangement, the products and services of ASP vendors are delivered over the Internet or dedicated communication networks. Thus a seamless integration between the services and the functions of the client organization is required to achieve a fast speed of service.

Owing to these two differences, several trends in utilizing the ASP model are emerging. First, more and more organizations are turning to ASP vendors for their mission-critical IT functions for the reasons discussed above. Second, classic research in outsourcing suggests that a company's size is negatively correlated with its tendency to outsource. However, as the ASP market has clearly shown, large companies are those that are driving up the demand for ASP service (Wittmann, 2000). Therefore, a diminishing effect of company size on the outsourcing decision is demonstrated. Third, the Internet or the dedicated communication networks via which ASP vendors deliver their products and services are raising the client-vendor relationship to a new level. Modern telecommunication technologies allow organizations to have access to the expertise and services that are not locally available by outsourcing to remote ASPs. Although the connection between the ASP and its client exists in the virtual world, their relationship is often at a very high level. The services provided by ASP vendors are often inseparable parts of their clients' business; hence ASP vendors are becoming an extension of the client organization rather than merely an outside service provider. This creates a closer relationship between ASP vendors and their clients. In many cases, the

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ASP vendor and its client work so seamlessly that they become an extended enterprise together. Finally, the seamless integration among ASP vendors is also critical. The partnership among ASP vendors becomes a crucial success factor for ASP vendors, as few ASP vendors can provide every component in an ASP value chain. As a result, ASP aggregators, which bundle services from various ASPs and offer them to clients as integrated packages, have made it easy for organizations to shop for technical solutions.

A value-driven approach to outsourcing using ASP

Given the distinctions between the ASP model and traditional outsourcing, organizations find themselves in uncharted territory, especially for small businesses that have little or no experience of IT service providers. To assist IS managers in this area, this study developed a value-driven approach to outsourcing using ASP based on previous research and the industry's best practices. The value-driven approach is an adaptation and extension of Simon's decision-making process (Simon, 1977), which was designed for making managerial decisions. The approach is designed to help IS managers make effective ASP outsourcing decisions based on the overall value that the selected ASP vendors and implementation methods can generate for the organization; while avoiding common mistakes such as cost domination. Hence, it is labeled "a value-driven approach". The approach is discussed in detail in the forthcoming sections.

Simon's decision-making process

Nobel Prize winner, Professor Herbert Simon, coined the term "bounded rational" to describe his view of human decision making. His theory suggests that, in today's complex world, individuals cannot possibly process or even obtain all the information for making a fully rational decision. Instead, individuals make decisions that are reasonable or acceptable based on limited information. The same theory can be applied to the information systems field. Rather than evaluating every factor that impacts information systems outcomes, IS managers make their decisions based on a number of well-established critical factors. Simon also proposed in his book the processes of management decision. His decision-making model (see Figure 2) consists of four phases: intelligence, design, choice, and review. The intelligence phase involves the search for conditions calling for decision from the environment; the design phase includes activities for inventing, developing and analyzing possible courses of action; the choice phase entails the selection of a particular course of action; and finally, in the review phase, managers evaluate the past choices. Most of Simon's research focuses on the first three phases of the process. Simon's decision-making model was widely used as the basis for many creative problem-solving strategies (McNurlin and Sprague 1998, p. 119).

A value-driven approach to outsourcing using ASPs

The value-driven approach is an adaptation and extension of Simon's decision-making model. The approach has five phases: identification, analysis, design, implementation, and assessment. Figure 3 depicts the value-driven approach to outsourcing using ASP. The five phases correspond to the four phases in Simon's decision-making model, as IS managers should make ASP outsourcing decisions in a systematic manner. The labels for the phases are modified to better describe the domain under study. While each phase is equally important, a large fraction of the time should be spent in the analysis phase to study the critical factors that influence an organization's propensity to outsource using ASP vendors. The implementation phase is not one of the original phases in Simon's decision-making model it is included here due to the complexity involved in today's outsourcing arrangements. Each phase of the value-driven approach has specific activities and deliverables that are explicitly stated in Table I. All of the phases in the value-driven approach are in place to ensure that managers are focusing on the overall value that each possible alternative generates. The five phases are discussed in detail in the following sections.

Identification

Like Simon's intelligence phase, identification activities entail searching the environment for conditions that call for decisions. In this

Figure 2 Simon's decision-making model

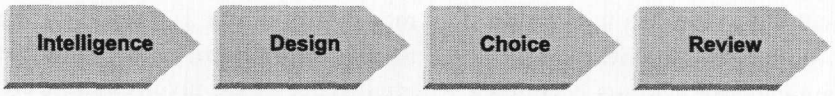


Figure 3 A value-driven approach to outsourcing using ASP

Table I A value-driven approach: activities and deliverables

Phase	Activities	Deliverables
Identification	Identify information needs	Work request form
	Define core competencies	Corporate and IT core competencies
Analysis	Determine decision criteria	Outsource decision criteria/decision tree
	Evaluate alternative solutions	Weighted scores for alternatives
	Select the best alternative	Make or buy decision
Design	Select a service provider	The selected service provider
	Determine client-vendor relationship	
	Prepare service contract	Detailed service contract and SLA
Implementation	Prepare the technological infrastructure for ASP services	Complete ASP value chain
	Manage internal issues	Prepared organization
Assessment	Monitor service quality	Service quality report
	Assess user satisfaction	User satisfaction report
	Value analysis	Continuation/termination decision

phase, IS managers search for areas of IT needs in which outsourcing using ASP vendors may have merits. This search can be either proactive or reactive. Using the proactive approach, IS managers start with analyzing the enterprise IT architecture and information systems plan (ISP) to identify areas of new development and support. The reactive approach, on the other hand, responds to the threats or problems encountered by the organization. Once a problem or need is identified, IS managers need to evaluate its strategic impact on the organization. Applications such as the e-commerce and ERP applications have profound strategic impact on business today, while desktop applications are important but have to do with operational level of IT activities. One important activity in this phase is to define the organization's and its IT department's core competencies. If the desired application is not within the organization's or its IT department's core competencies, then it becomes a good outsourcing candidate. The primary deliverables of this phase are the service request form for the desired application and a list of corporate and IT core competencies.

Analysis

Is ASP a viable solution to outsource an organization's IT functions? This is a question to be answered in the analysis phase. A large fraction of the time and effort should be expended in this phase. Some critics of the ASP model claim that ASP vendors cannot deliver customized, high quality and secured service (*HRFocus*, 2000a). While this statement may not be true for all ASP vendors, it does caution IS managers to evaluate carefully the viability of using ASP as an outsourcing method, especially for the mission-critical IT functions. While each organization may have its own list of criteria for making the make or buy decision, the critical function-specific criteria include production cost advantages, transaction costs, asset specificity, internal expertise, maturity/newness of technology, and application media fit.

Figure 4 displays the seven critical factors that will affect an organization's propensity to outsource using ASP vendors. The emphasis here again is that the cost is not the only dominant factor. Rather, ASP vendors' ability to create overall value that organizations cannot easily achieve themselves is the driving force behind the outsourcing decisions.

Production cost advantages and transaction costs are the two traditional dimensions used to address the make or buy decision in software development. These two dimensions focus on the costs associated with outsourcing. Production cost advantages refer to the cost savings resulting from outsourcing rather than internalizing the IS function. According to neoclassical economics, firms are more likely to outsource if the production cost advantages are high (Williamson, 1981). Another type of cost associated with outsourcing is transaction cost, which refers to the effort, time and costs incurred in searching the outsourcing partners, reaching outsourcing agreements, and implementing the outsourcing. Previous studies have found that both production cost advantages and transaction costs influence a firm's decision to outsource its IS functions. Ang and Straub (1998) found that production cost advantages played a dominant role in outsourcing decisions, while transaction costs played a secondary role.

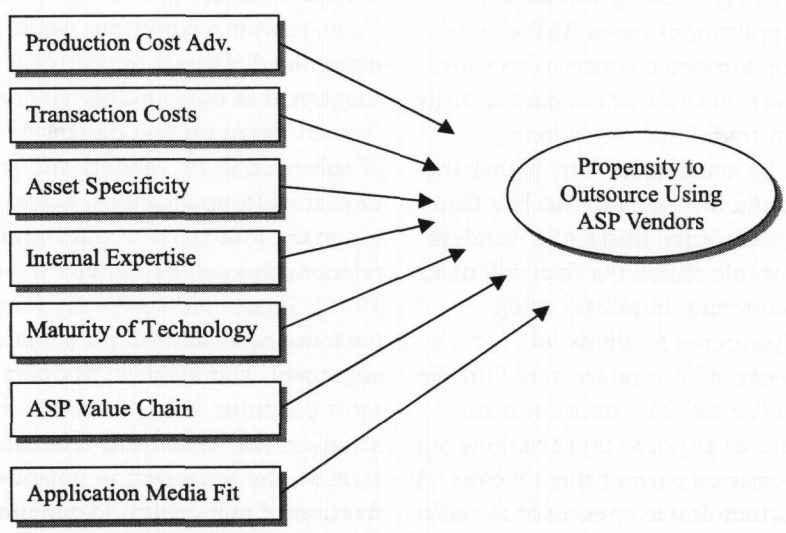
Asset specificity refers to how easily the asset can be used elsewhere by other users. Applications with low asset specificity, such as desktop applications and payroll systems, can be obtained from a large pool of ASP vendors with relatively low costs. On the other hand, assets that are highly specific to an organization, such as a highly customized SCM application, are less available and more costly in the marketplace. To be profitable, ASP vendors must deliver the same application to many clients, and customization may not be possible in many cases (*HRFocus*, 2000b). Therefore, asset specificity adversely influences an organization's decision to outsource (Nam *et al.*, 1996).

Internal expertise refers to an organization's experience with the technologies involved in developing and maintaining an application. Today, the pace of changes in both the business and technological environment far exceeds IT departments' ability to acquire expertise in new technologies. ASP vendors can provide such highly sought-after expertise to reduce significantly their clients' time-to-market and costs. Organizations are likely to outsource IT functions that require the deployment of new technologies for the following two reasons:

(1) the internal IT staff lacks the expertise in the new technologies; and
(2) the firm prefers to wait until the technology matures before making sizable investment to acquire the expertise internally.

Today's business environment requires firms to continuously deploy new technologies in order to stay competitive, and this is one of the reasons that are fueling the demands for ASP services that can bring these new technologies to firms without significant risks (Boyd, 2000).

Figure 4 Factors influencing outsourcing decisions



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IBM Global Services (2000) identified five components in an ASP value chain: software, hardware, implementation, data center/ hosting, and connectivity. It requires all five components to work seamlessly to ensure the success of application delivery. Depending on the type of ASP vendors that are chosen, ASP vendors often handle one or several of these components, and it is the job of the client or another third party to fill the void. Hence the availability and stability of the ASP value chain become one of the deciding factors for whether outsourcing with ASPs should be considered. Many companies rely on ASP aggregators such as Jamcracker and Aqiliti to locate all the ASP vendors that provide the necessary pieces for a complete solution for the companies' IT needs. If such a value chain is not in place, then in-house development or certain types of hybrid solutions should be considered. Finally, the application media fit refers to the viability of delivering a particular application through a particular medium. In an ASP environment, applications are delivered via either the Internet or the dedicated communication networks. IS managers need to ask themselves whether the Internet has the security, reliability, scalability, responsiveness and bandwidth that the application demands. To safeguard clients' critical data, ASP vendors can implement a number of security technologies such as virtual private networks, firewall and intrusion detection programs. Virtual private networks (VPN) have emerged as viable network solutions for ASPs to deliver their applications to clients in recent years. VPNs utilize the Internet back-bone to establish secured, high speed, low cost site-to-site connections. Using VPNs as the delivery medium for applications eases ASP clients' security and performance concerns to some extent. However, in cases where data security is pivotal, then traditional outsourcing methods may be considered. The higher the application media fit, the more likely a firm will choose to outsource using ASP vendors.

At the end of this phase, the firm will make a choice of developing in-house, using traditional outsourcing methods, or outsourcing using ASP vendors based on the information collected. The decision is not straightforward, as different organizations put different emphasis on each of these factors. A weighted approach that is often used to select the best design strategy in a system development project can be used to compare several alternatives and make a rational decision (Hoffer *et al.*, 1998).

The first two phases are critical in making the make or buy decision. The decision can be modeled using a decision tree depicted in Figure 5.

Design

The objective of this phase is to design the appropriate outsourcing arrangement, so that the value for the organization can be maximized. The three tasks relevant to achieving this objective are selecting a service provider, determining client-vendor relationship, and preparing a contractual agreement with the selected service provider.

For an organization to select the ASP vendor that will create the greatest synergy, several critical factors are to be considered. Cost is usually an important factor, yet it should not be treated as the only factor. Overall service quality, security and vendor stability are often cited as the primary concerns of ASP users (IBM Global Services, 2000). In addition, it is important to choose an ASP that serves within your particular industry rather than serving a broad spectrum of industries (Holohan, 2000). Such an ASP would be more familiar with the dynamics, the concerns and requirements of your industry. The criteria for selecting the right ASP vendor for an organization vary from one industry to another (Korstad, 2000), but some of the common criteria include the ASP vendor's platform expertise and flexibility, infrastructure and operational scalability, security, global support, level of service, and pricing structure (Meister and Fenner, 2000).

Once a service provider is selected, the client-vendor relationship needs to be determined. Classic outsourcing literature suggests that outsourcing relationships be defined based on two dimensions: the extent of substitution by vendors and strategic impact of IS applications. Based on this rationale, four types of outsourcing relationships can be derived (Nam *et al.*, 1996). Figure 6 displays the four types of outsourcing relationships: support, reliance, alignment, and alliance. Support refers to the most primitive form of outsourcing arrangement. When this relationship is formed, the organization outsources a small fraction of non-critical IS functions to the service provider. Reliance relationship is

Figure 5 Make or buy decision tree

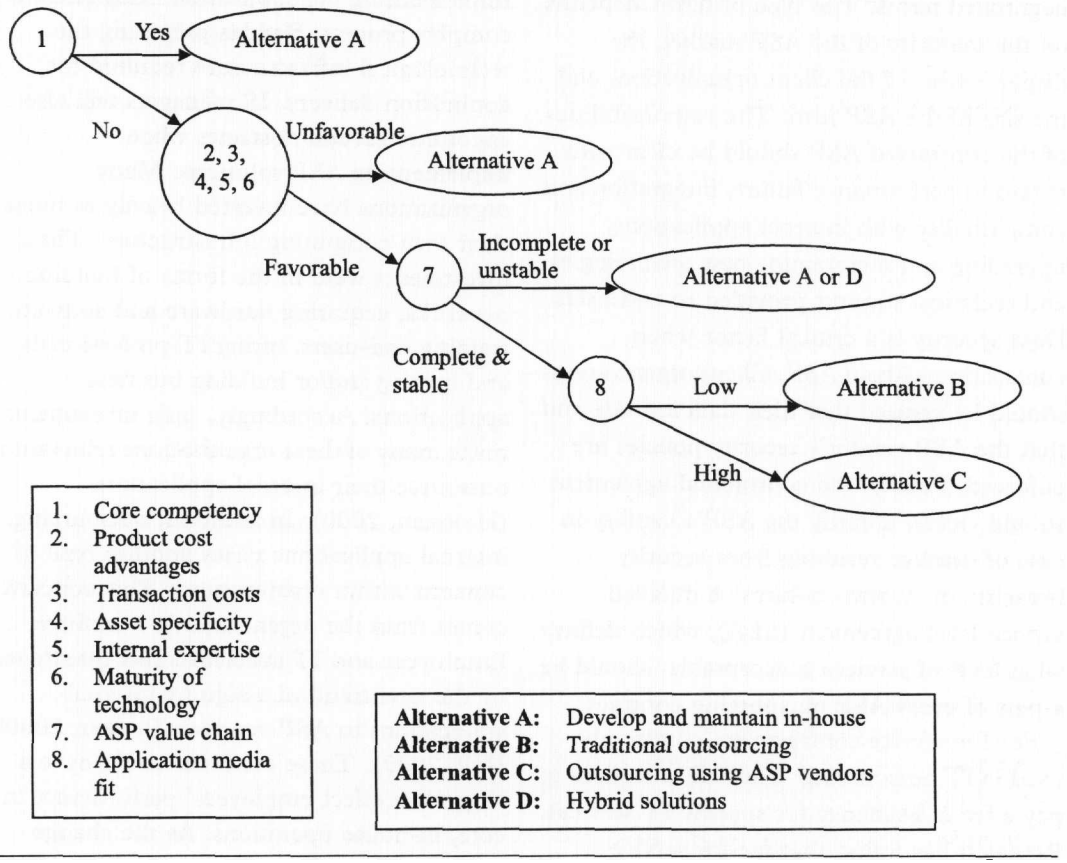
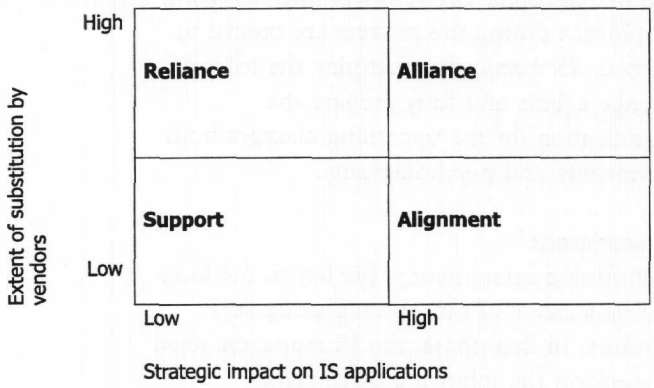


Figure 6 Four types of outsourcing relationships



Source: Adapted from Nam *et al.* (1996)

formed when a firm reaches a long-term contractual agreement with a service provider to provide non-critical IS functions. In both of these two relationships, cost reduction is often the main reason for outsourcing. If a service provider provides consulting services to the firm on various strategic IS functions but is not significantly involved in the IS operations, then the outsourcing relationship is perceived to be alignment. The last type of outsourcing relationship, alliance, requires the client to entrust its service provider with strategically critical IS functions completely. This type of outsourcing, while risky to some extent, is what is commonly seen in the ASP market. Strategically important applications, such as e-commerce, CRM, SCM, and ERP applications, account for a large portion of the ASP business. Organizations rely heavily on the expertise of ASP vendors in these areas. For this type of relationship to work, the organization needs to work closely with its service provider to achieve seamless integration between the organizations and their systems. Therefore, in many situations, instead of being a separate entity, ASP vendors act as an extended part of their client organizations. Treating ASP vendors as strategic alliance partners is an effective way to ensure the long-term quality and corporation that will benefit both the ASP vendors and their clients in the long run.

Once the client-vendor relationship is determined, a contractual agreement is required to define the responsibilities of both the ASP vendor and the client and establish accountability measures. Melby and Klauder (2000) outlined four crucial components of an ASP outsourcing contract: the type of the contractual agreement, responsibilities, data security, and liabilities. The contractual agreement between the client organization

and an ASP vendor can be of standardized or negotiated terms. The type of terms depends on the maturity of the ASP market, the disparateness of the client organization, and the size of the ASP firm. The responsibilities of the contracted ASP should be clear with regard to performance failure, integration and compatibility with internal applications, upgrading and maintaining new technologies, and technical support provided to end users. Data security is a critical factor when contracting with an ASP. Client organizations should be assured that their data are safe and that the ASP vendor's security policies are enforced. Finally, the contractual agreement should clearly identify the ASP's liability in case of damage resulting from security breaches or systems failures. A detailed service level agreement (SLA), which defines what level of services is acceptable, should be a part of every ASP outsourcing contract.

Fee-for-service contracts are commonly used in IT outsourcing. They allow a client to pay a fee in exchange for specific IT services. Research has found that fee-for-service contracts work the best when the client can clearly define its IT needs. However, when the technology is "ill-defined, immature or unstable", this type of contract is often difficult to enforce and may cause the outsourcing relationships to deteriorate (Lacity and Willcocks, 1998). The current failures in some of the ASP outsourcing cases are partly due to IS managers' inability to define their needs clearly, especially in the e-commerce and ERP areas. Therefore, it is imperative for IS managers to be able to define their requirements clearly and precisely in great detail. For example, IS managers need to determine whether the availability is measured end-to-end or just within the ASP vendor's proprietary network and the cost implications of 0.1 per cent difference in downtime to the organization (Jones, 2001). When the needs are difficult to define, the organization may consider entering a strategic alliance or partnership relationship with the ASP vendors rather than the traditional fee-for-service contractual agreements. Performance-based contracts and risk-sharing contracts may also be considered to minimize the risks to which an organization is exposed (Moran, 1996; *HRFocus*, 2000a).

Implementation

Implementing the application using ASPs is a complex process. Besides preparing the technological infrastructure required for application delivery, IS managers will also encounter several obstacles when implementing ASP solutions. Many organizations have invested heavily to build their own computing infrastructure. These investments were in the forms of building networks, acquiring hardware and software, training end-users, hiring IT professionals, and buying and/or building business applications. Accordingly, such investments make many of these organizations reluctant to outsource their internal applications (Holohan, 2000). In addition, outsourcing internal applications raises another type of concern within organizations. This concern comes from the organization's workforce. Employees and IT specialists feel threatened by the new trend of assigning internal applications to ASP vendors (Booker, 2000b; Hall, 2000). These concerns could have a long-term effect employees' performance in core, in-house operations. As the change management literature (e.g. Maglitta, 1994; Murray and Harding, 1991) suggests, gaining top management commitment and involving employees during the process are crucial to success. IS managers must play the roles of change agents and fully prepare the organization for the upcoming changes both technically and psychologically.

Assessment

Continuing assessment is the key to the long-lasting success of outsourcing using ASP vendors. In this phase, the IS managers need to perform the following three tasks: monitoring the service quality of ASP vendors, assessing user satisfaction, and conducting periodical value analysis.

The overall service and support quality is one of the most common concerns among ASP clients. One thing that IS managers need to keep in mind is that the service availability of an ASP vendor depends on the availability of each and every component in the ASP value chain. For example, the total service availability is the product of network availability, data center availability and application availability (IBM Global Services, 2000). Hence, the monitoring of the service quality needs to be extended to every component of the ASP value chain. The

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classic SERVQUAL literature suggests that IS managers evaluate the quality of services by looking at the tangibles, reliability, responsiveness, assurance and empathy of the service provider (Pitt *et al.*, 1995). Besides these dimensions, another crucial aspect of the service quality specific to ASP vendors is how secured the services are. Security is always an issue especially when dealing with the Internet as an outsourcing platform (Melby and Klauder, 2000). The use of the ASP model results in having critical data outside the direct control of an organization's management and IT staff. ASP users were quite alarmed when 30 ASP vendors were recently investigated for alleged selling of their customer data (Torode, 2000). Therefore, close monitoring of how security measurements are being enforced by ASP vendors should be given high priority. User satisfaction is an important indicator of IS success (DeLone and McLean, 1986). User satisfaction with the services provided can be combined with other objective measures such as service downtime to assess the service quality of an ASP vendor. Finally, as both the business and technological environment changes, the overall value of existing ASP outsourcing arrangements may vary in the future. Organizations need to conduct value analysis periodically to ensure that the value of outsourcing using ASP vendors is sustainable. Based on the new analysis, organizations will make the decision to continue the outsourcing arrangement, switch to another ASP vendor, internalize the IS function, or abandon the application.

The contribution of the value-driven approach to outsourcing using ASP lies in that it allows IS managers systematically to make outsourcing decisions and manage outsourcing issues. By following this approach, organizations are expected to maximize the overall value of using ASP as an outsourcing method.

Conclusion and future research directions

The ASP model has proven to be a promising solution to IT outsourcing, yet it is still in its infancy. The projected growth in the ASP market in the next few years will require IS managers to understand better the benefits of this service model as well as its pitfalls. This study argues that a systematic approach needs to be adopted to amplify the overall value of outsourcing arrangements while minimizing the risks for organizations. The value-driven approach developed by this study gives IS managers an invaluable tool for managing today's complex IT outsourcing options. This study has also identified ample opportunities for future research in ASP. Future researchers may pursue a number of directions. First, the viability of using ASP vendors as outsourcing partners for a variety of applications needs to be further investigated. Second, the different options for ASP contractual agreement and SLA and their implications from the long-term client-vendor relationship need to be explored. Finally, an empirically validated instrument for measuring the service quality of ASP vendors is urgently needed.

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