Application Service Providers: Will They Succeed?

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Abstract. This article examines the likelihood of success for application service providers (ASP) drawing from the outsourcing literature, interviews with ASPs in the USA, and the experience of Bennett who has held leadership roles in ASP and ERP in South East Asia. This article proposes that application service providers (ASP) rent packaged software, predominantly over the Internet. It shows why organizations might employ the ASP model to manage their enterprise resource planning systems. Using a framework adapted from Lacity and Hirschheim, it demonstrates that the financial, business, technical and political reasons why organizations evaluate outsourcing can be applied to ASP model. While ASPs generally target the mid-market, large enterprises are also using ASPs to introduce new ERP modules. Potential users of ASP should regard the risks of outsourcing prior to entering into business arrangements. This examination concludes that there are strong financial and technical reasons for adopting the ASP model and therefore it has potential to succeed.

Key Words: application service provider, outsourcing, enterprise resource planning

Introduction

The converging worlds of telecommunications, application software, and consulting are creating new online services at a rapid rate. We are seeing a “step change” brought by the Internet, as organizations assess how they will re-invent themselves to address the changing face of competition.

With improved interfaces between enterprise resource planning (ERP) systems and internet browser technologies, coupled with cheaper telecommunications and increased bandwidth availability, a market has arisen for the delivery of ERP and other applications via the World Wide Web. Is this application-specific service delivery a new twist in the outsourcing tale or is it an old business with a new name?

This paper starts by developing a definition of application service provision that differentiates it from the traditional bureau service. After examining the components of an application service provider (ASP), we explore the business environment that is driving executives to consider the ASP model for ERP installations. We then draw on Lacity and Hirschheim’s list of reasons why organizations initiate outsourcing evaluations to explore how current value propositions presented by the ASP market meet these needs. Following some general ASP marketplace considerations we conclude with a brief review of outsourcing risks that an organization needs to weigh against the potential benefits of ASPs.

In analysing the current ASP marketplace, we draw from the Outsourcing literature, recent interviews with six major ASPs in the United States of America (Brightstar, CSC, e-Online, Finetrics, Hunter Group, and SAPHosting) and the experience of the first author, Bennett, who managed the ERP, Outsourcing and ASP practices for a “Big4” consulting group in the Asia-Pacific region and more recently as head of a leading software vendor, SAP, for Australasia. Our data is sourced from ASP suppliers and advisers. Future research will survey the attitudes of ASP users.

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Like any information systems (IS) marketplace development, the ASP model may enjoy great success or be replaced quickly by other market or technical offerings. In this article we look to the development of outsourcing in general, a continuing phenomenon, and compare its attributes with the development of ASPs in the United States of America (USA) and a large ERP/ASP consulting practice in South East Asia (PriceWaterhouseCoopers). From this investigation we believe that ERP managers will consider Application Service Provision as a feasible alternative to an in-house approach. We further find that the ASP model will attract market share primarily because of its potential to lower the total cost of ownership and its ability to provide expertise that is otherwise difficult to attract and retain.

**Defining Application Service Provision**

What is different about application service provision? Is it just another variation of outsourcing? Here we argue that application service provision is a form of outsourcing, specifically selective outsourcing, where firms rent packaged software and associated services from a third party. We use this definition to distinguish ASPs from traditional bureau services to which they have been likened in the popular press (McKie, 1999).

Lacity and Hirschheim (1993a) described outsourcing as the use of external agents to perform one or more organizational activities. Later, they described information systems (IS) outsourcing as the use of a third party vendor to provide information services and products that were previously provided internally (Lacity and Hirschheim, 1995). Loh and Venkatraman (1992) define outsourcing as the significant contribution by external vendors in the physical and/or human resources associated with the entire or specific components of the IT infrastructure in the user organization. Alpar and Saharia (1995) take a control and management view of outsourcing describing it as typically reserved to time-based contracts in which one or more IS functions are delegated to outside vendors. Whereas outsourcing contracts specify a service and result that the market is to provide, contracts that call for the market to provide resources to be deployed under the buyer’s management and control describe insourcing arrangements (Wilcocks, Lacity and Fitzgerald, 1995; Feeny, Wilcocks, Rands and Fitzgerald, 1993; Pinnington and Woolcock, 1995). Outsourcing vendors provide data centers to host applications already installed by their customers and their implementation partners. This combination of insourcing (implementation and maintenance resources deployed and managed by the customer) and outsourcing of the data center is regarded as application hosting. ASPs provide maintenance and implementation services as part of their “one-stop shop” solution.

Selective sourcing, when less than 80% of IS activities are outsourced (Wilcocks, Lacity and Fitzgerald, 1995), is where the market supplies specific information systems activities such as help desk or networking support. Earlier research concludes that selective sourcing has advantages over total outsourcing arrangements including maintaining control over core information technology (IT) activities (Lacity, Wilcocks and Feeny, 1996). The ASP model provides selective sourcing choices based on individual applications, assuming that the services provided by the ASP are less than 80% of the total IS function. Several other outsourcing variants are described in Table 1 below.

Application Service Provision is a form of selective outsourcing except in those cases where the application services provided exceed 80% of IS activities. Then we would also refer to it as total outsourcing. The question remains whether it has some distinguishing feature. Let us now examine some recent definitions of ASP in search of a distinctive characteristic.

Deloitte Research (Roddy, 1999) defines an ASP as a service firm that deploys, hosts, and manages application solutions for rent to business and residential customers. A US Internetworking Inc. (US based ASP) vice president defined it as “being able to deliver the hardware, application software, network infrastructure and take full responsibility for a monthly fee” (Cope, 2000). Some writers position ASPs as being an Internet based phenomenon (McKie, 1999). Other observers, such as Legg Mason Equity Research (1999), extend the delivery mechanism to virtual private (non-internet based) networks. In the light of such definitions, it is difficult to distinguish a modern ASP from the 1963 Payroll Bureau Service provided by Ross Perot’s Electronic Data Systems to Frito Lay and Blue Cross.
The authors believe there is a difference. It lays in the nature of the application provided. We maintain that the distinguishing feature is that such applications should be packaged application software openly available in the marketplace. Packaged application software is pre-developed, solution-based software normally made available for use via licensing. Consumer organizations have the choice between purchasing, implementing and maintaining package application software e.g. SAP, Oracle Financials, Peoplesoft, Microsoft Word or renting a general or customized implementation of that software from an ASP. ASPs may bundle implementation and configuration services for larger and more complex applications or merely provide a standard instance of the application used and configured by customer. The sparsely available mostly practitioner literature tends to assume that the ASPs physically host the software. This model was not adopted by one of the earliest ASPs, Corio (a Peoplesoft ASP) who outsourced their data center to Exodus. Corio rents their packaged application implementation and management capability leaving the background hardware management to their partner (Nee, 1999). Finetics, a new ASP for SAP also outsources their data center to Exodus.

While it is tempting to define more narrowly the Internet as the delivery mechanism for ASPs, there is no compelling reason to disregard the use of non-Internet delivery such as virtual private networks to deliver applications. The authors believe, however, that the major growth in this market will be Internet based.

Our definition therefore is:

*Application Service Provision is a form of selective outsourcing where a third-party organization rents generally available packaged software applications and related services.*

This definition encompasses ASPs that personally provide application and data center and other infrastructure services. It differentiates ASPs from providers of online proprietary software products (and related services). The authors maintain that these are more in the nature of a bureau service rather than application service provision.

An ASP rents packaged software to customers on either a transaction or user basis. Some companies, such as e-Online, see the arrangement more as a lease than a rental agreement because of the fixed time component, e.g., 3 years. A lease arrangement usually passes ownership of the object leased to the customer at the end of the period. Package software vendors license their product thereby never passing ownership of the software to their customers.
ASP's will offer all types of software, from the Microsoft suite of products at one end, through to the large ERP and CRM vendors at the other. Related services include implementation, configuration, maintenance, support, and application hosting. Some companies, such as Finerics are extending their service offerings to include professional accounting services, banking and insurance. Each of these types of ASP offering is very different, and will face different challenges. The definition does not discriminate between the types of software and size or scale of either the enterprise or the nature/shape of the solution.

The Components of an ASP

Using the following model, we outline and discuss the important components of an ASP’s operational environment. (Fig. 1.)

The browser interface—what the customer sees

One of the fundamental changes brought about by the Internet revolution is the change to the customer interface. The browser is now the door to your customer’s world. Using a browser interface as the front end of an application keeps the cost of both infrastructure and technical support very low for the consumer. ASP is typically a Web based offering which allows the customer to access functions that operate on various back office systems.

The internet service provider (ISP)

If we look back in history, communications has long been one of the biggest issues in Information Technology. The ability to deliver first class systems both nationally and internationally has been a challenge. Dedicated lines have long been an answer for larger companies. For the SME, however, the cost of dedicated lines has generally been prohibitive. The Internet, the ISP, and the development of Broadband services have changed the landscape. SMEs can now have access to bandwidth that allows complex, rich, real time movement of information around the world. The barriers of geography are now disappearing at a dramatic rate.

Today, the central challenge of the ISP is maintaining sufficient response over the Web. ERP or CRM systems may generate a significant volume of traffic, e.g., large reports. Some ERP systems generate multiple updates to multiple files from a single transaction entry by the user. While this updating generally occurs in the back end system (and therefore will not impact directly on response), the flow of information between the back end system and multiple users can be substantial. Response time to the user is therefore a central challenge that the ISP must address. To be successful, the response must be first class. Clients need to have confidence that if problems occur with response times, whether it is bandwidth, or CPU capacity, the ASP will address the problem.

Support center: implementation of the software

Regardless of the size of a client, each business will seek to have his or her own needs reflected in the software. The business challenge for the ASP is to maintain enough consistency across clients in order to gain economies in the maintenance and support processes. SMEs or other customers without ERP experience will probably settle for the cheaper, more quickly implemented standard system. Organizations

![Elements of an ASP](image)
that have had freedom and flexibility to incorporate their own data structures in their past ERP and CRM systems are unlikely to settle for a solution offering rigid conformity. Such ASP customers will seek a more specific implementation of the software, e.g., their own cost centers, material structures, and numbering systems.

To deliver tailored ERP systems, the ASP will need experienced implementers who can customise the software to meet clients' needs. Timing is also an essential element of success. ASPs need to be prepared to implement quickly (i.e., 3 months) if the business case for ASP is to succeed.

Support center: managing change in the client
Delivering new software over the Web does not vary the need to train staff in a new system or new processes. Traditional issues such as staff communication, change management, and training are therefore essential if client staff are to accept the new systems. The ASP will need to provide adequate on-site support to the client before and during live operation. Tailored courses (either face to face) or via the Web will also support successful implementation. The essential ingredient here is what could be termed "arms and legs". The ASP needs to co-ordinate with the client management to be on site and actively move the client staff into the new environment.

Support center: helpdesk support
A call center support is essential where an ASP is providing "mission critical" systems to the operation of a business. These call centers will need sufficient staff to resolve a substantial proportion of calls at the first level (i.e., greater than 75%) and operate on a 24×7 basis. The sort of support required will range from process consulting through to "bugs" in the software. The ASP must staff itself to provide a full range of services including on-site work. ASPs themselves require support from the software vendor. Vendors such as SAP have instituted a certification process for ASPs. This ensures quality services to their customer base and provides back-end helpdesk support to the ASP.

Hardware farm
The hardware farm, as the name implies, provides capacity to the ASP for the delivery of the ERP or CRM software. The most important ingredient is the ability to grow the capacity to meet the needs of the client. In an ERP environment, a 200-user client may require up to 40 GB of disk, and be processing thousands of transactions on a daily basis. Capacity, full redundancy, and disaster recovery capability are therefore the essential elements of success in the hardware delivery. An issue raised by one ASP interviewed was balancing the number of clients on one platform with redundancy and recovery strategies. This becomes very important for ASPs that support ERP systems because of the mission critical nature of those systems.

Enterprise Resource Planning (ERP)

Today, ERP accounts for over half the world installed base of application software (Gable, van der Heever, Scott, and Erland, 1997). The explosive growth of ERP and its saturation in the large enterprise market has led to a battle for the mid-market (less than $200m in revenue) otherwise known as small to medium enterprises (SMEs). ERP vendors are using the ASP model to provide a low cost entry for mid-market companies. Oracle, in example, is both a software vendor and an ASP. SAP has established SAPHosting to provide ASP services. Others software vendors have established partners in the ASP market such as Corio, Hunter Group (Peoplesoft), IBM (Great Plains), EDS, e-Online and Finerics (SAP) (Legg Mason, 1999). Major consulting companies such as PriceWaterhouseCoopers have also established ASP services.

The ERP market has changed dramatically in the last 20 years. Vendors have come and gone as ERP shifted from mainframe in the early 1980s to the minicomputer in the late 1980s, client server in the mid 1990s to the Web based applications today. The current emphasis on e-enabled applications and the extension of ERP into a broader product set is another step in the rapid change towards a fully Web based economy.

A range of influences, both technical and organizational, has encouraged the increasing uptake of these large, complex enterprise software packages. The global rush to deploy information technology in support of re-engineering and right-sizing the firm demands both substantial and relatively rapid change to the information systems portfolio. The backlog in IS departments, problems integrating systems, the
inability of legacy systems to cope with the "Year 2000" problem, and the introduction of Euro currency have further increased demand for these complex "mega-packages" (Gable, van der Heever, Scott, and Erliank, 1997).

Faced with uncertainty in implementation, continuing maintenance and upgrade costs, and shortages of expertise in the marketplace IS managers are looking for alternatives to insourcing their ERP systems. This article considers what drives ERP customers to employ an ASP model and discusses these drivers in the context of the ASP market.

**The ASP value proposition—does it stand up?**

One of the most important ingredients in the success of an ASP is the value proposition to the client. The choices currently available to a chief information officer (CIO) in today's world are wider than ever before. It is a tough decision for a CIO to decide where to invest their precious IT budget. Should they dot.com their business, invest in CRM, extend ERP, implement a data warehouse, fix the supply chain, outsource? The list of available technologies and management solutions are wide and varied. The challenge for the ASP is to deliver a business case to the CIO that stands up and beats the alternatives. Why would a CIO adopt this variant on outsourcing?

To answer this question we use the reasons why organizational members initiate outsourcing evaluations developed by Lacity and Hirschheim through their studies of outsourcing and insourcing in thirteen (1993a) and six (1995) organizations respectively. We discuss the offerings of the ASPs in the context of their framework and thereby extrapolate the likely success of the ASP model.

**Outsourcing**

In the early 1990s Mary Lacity and Rudy Hirschheim conducted a series of two, extensive multiple case studies of first, the outsourcing (Lacity and Hirschheim, 1993a, 1993b, 1993c, 1994a; Lacity, Hirschheim and Willcocks, 1994) and second, the insourcing (Lacity and Hirschheim, 1994b; 1995; Hirschheim, 1995) experiences of 13 and 6 large, private sector U.S. organizations respectively. They based their work on two principal theories: Williamson's (1985) transaction cost theory (TCT) and Pfeffer's (1981) political model. Transaction cost theory was used because a main determinant of executives outsourcing decisions was expected savings from the arrangement. Pfeffer's political model was used to provide a balancing view based on the political aspects of decision making in organizations.

From their research they concluded that the reasons for evaluating outsourcing within an organization range through financial, business, technical or political. We use this framework to consider the likelihood of success of ASPs. Other pertinent market issues are also considered. First we describe Lacity and Hirschheim's (1995) framework and then we discuss ASP offerings in the context of their framework Table 2.

In this article we examine and discuss the ASP model from these four perspectives.

**Discussion**

**Financial reasons**

Loh and Venkrataman (1992) propose that a high level of business cost structure may motivate a firm to review the overall structure reflected in its physical infrastructure (such as plant and equipment), including its IT infrastructure. Firms turn to outsourcing to cut costs (Minoli, 1995; Lacity and Hirschheim, 1993a, 1993c, 1995) or at least control them. This can be a response to either tough economic or competitive climate (Willcocks, Lacity and Fitzgerald, 1995). For an ASP to provide a lower cost alternative service to a CIO, it must attain a critical mass of clients thereby enabling it to minimize its cost base. This critical mass will vary according to the type of package software offered.

Some arrangements, however, are not solely motivated by lower costs. Applegate, McFarlane and McKenney (1996) suggest that outsourcing is appealing because it offers an opportunity to liquefy the firm's intangible IT asset, thus strengthening the balance sheet and avoiding a stream of sporadic capital investments in the future. Smith, Mitra, and Narasimhan (1998) argue that firms enter into large-scale IS outsourcing agreements primarily to reduce costs and to generate cash. The ASP model for ERP proposes smaller, known cash outflows represented by rental payments as an alternative to up-front investments in infrastructure and implementation costs.
<table>
<thead>
<tr>
<th>Reason</th>
<th>Attributes</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>Reduce costs</td>
<td>Vendors enjoy economies of scale enabling them to provide IS services at a lower cost.</td>
</tr>
<tr>
<td></td>
<td>Improve cost control</td>
<td>Implement cost controls that more directly tie usage to costs.</td>
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<tr>
<td></td>
<td>Restructure IS budgets</td>
<td>By converting capital outflows (purchase of software and infrastructure) into operating outflows (rent)</td>
</tr>
<tr>
<td>Business reasons</td>
<td>Focus on core competencies</td>
<td>By outsourcing non-core competencies.</td>
</tr>
<tr>
<td></td>
<td>Provide IS for start-up companies</td>
<td>Enabling start-ups to establish there IS functions quicker and cheaper.</td>
</tr>
<tr>
<td></td>
<td>Devolution of organisational and management structures</td>
<td>Reducing headcount or downsizing through outsourcing</td>
</tr>
<tr>
<td>Technical reasons</td>
<td>Access to technical talent</td>
<td>Where companies cannot afford, attract or retain expertise.</td>
</tr>
<tr>
<td></td>
<td>Access to new technologies</td>
<td>Including new infrastructure or technologies requiring greater expertise than locally available.</td>
</tr>
<tr>
<td></td>
<td>Improve technical service</td>
<td>From support services with greater expertise or who can provide more timely service.</td>
</tr>
<tr>
<td></td>
<td>Focus the internal staff on core technical activities</td>
<td>By outsourcing non-core activities.</td>
</tr>
<tr>
<td>Political reasons</td>
<td>Reaction to the efficiency imperative</td>
<td>Where local IS services are not perceived to be as efficient as those provided by the market.</td>
</tr>
<tr>
<td></td>
<td>The need to acquire new resources.</td>
<td>Such as upgrades, additional personnel or cash.</td>
</tr>
<tr>
<td></td>
<td>Reaction to the bandwagon</td>
<td>Managers wanting to emulate the successes reported in the popular press.</td>
</tr>
<tr>
<td></td>
<td>Reduce uncertainty</td>
<td>By having third parties manage fluctuations in user demands.</td>
</tr>
<tr>
<td></td>
<td>Eliminate a troublesome function</td>
<td>Poor implementations for example.</td>
</tr>
<tr>
<td></td>
<td>Enhance credibility</td>
<td>By outsourcing their kingdom, IS managers show they are corporate players.</td>
</tr>
</tbody>
</table>

**Reduce costs and restructure IS budgets.** Here we demonstrate that through economies of scale achieved by the ASP, lower costs can be passed onto the customer. Furthermore the ASP model is based on rental agreements thereby converting capital outflows (purchase of software and infrastructure) into operating outflows. To explore this further we use a practical example of a small to medium enterprise (SME) with around 50 users looking to implement standard financial and logistics (ERP) software.

Bennett, drawing from his experience in advising ERP ASPs, maintains that such a critical mass will
result in a cost base described below. This experience is similar to that found by Lacity and Hirschheim (1993a, 1995) in their studies of US-based companies.

**Software.** The ASP can expect to get a discount of around 30% to 40% on the software through reseller agreements with the vendor or volume discounts.

**Hardware.** As with software, the volume of hardware purchased by the ASP will be substantial, and will therefore attract up to 40% discounts. Alternatively, the ASP itself may outsource the operation of the hardware to a third party paying a flat fee for each user eg. Brightstar, Finetrics and Corio.

**Implementation.** The ASP will use a pre-configured template where possible and this template may be industry specific. Most ASPs interviewed use this strategy. The ASP will make clear which parts of the system they will and will not customize. In order to achieve economies of scale through reduced maintenance cost in supporting multiple clients, the ASP will seek to keep conformity of systems across multiple customers. Using these strategies, an ASP can reduce the cost (and time) of implementation under this scenario by 50%. The skill of the ASP is to identify which components can be re-used across their client base.

**Support.** The support cost is another area where the ASP has significant economies of scale. In example, an SME may need to employ 3 staff to provide support. These three staff are required because of the three areas of coverage in our example (Finance, Logistics, and Technical). The ASP, on the other hand, has significant advantage in being able to deploy staff across multiple clients. The incremental cost of adding additional resources for an SME is significantly greater than for an ASP.

Under a traditional approach, our company will need to purchase a software license, hardware, and services from an external implementer of the software. In addition, the company will need to provide staff to provide an internal support role for the new system. The software company will charge an annual maintenance fee (lets assume 17% of license). We assume that the company would be required to upgrade to a later release of the software every 3 years. Software vendors generally limit their support for old versions of software. We assume a cost of capital of 8%.

Our company’s cost would therefore be as set out in Table 3:

<table>
<thead>
<tr>
<th>Expense type</th>
<th>AUDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>200,000</td>
</tr>
<tr>
<td>Hardware</td>
<td>200,000</td>
</tr>
<tr>
<td>Implementation</td>
<td>600,000</td>
</tr>
<tr>
<td>Maintenance each year</td>
<td>35,000</td>
</tr>
<tr>
<td>Support staff × 3 @ 50k (indexed each year by 10%)</td>
<td>150,000</td>
</tr>
</tbody>
</table>

**Improve cost control.** Introducing ASP into an organization assists in allocating costs in a way that ties them more directly to usage. An outsourcing arrangement, can reduce the incidence of excessive user demands, overuse of particular IS staff and frivolous changes (Lacity and Hirschheim, 1995). The ASP contract or service level agreement will specify usage. Because ASPs usually work on a fixed monthly charge, they more exactly define and often cap their services within that fee. Consequently, cost controls are improved.

**Business reasons.** Lacity and Hirschheim’s business reasons include a focus on core competencies, creating flexibility for organizational and manage-
ment structures (downsizing) or in the case of mergers and acquisitions, and when companies do not have the capital to establish their own IS facility such as a start-up company. In this article we consider the focus on core competencies and providing for IS start-ups. The six major ASPs that were interviewed were not able to provide examples of using the ASP model for reasons of downsizing or to facilitate mergers and acquisitions. The immaturity of the market is a probable cause of this notion.

Focus on core competencies. Many corporate executives hold the view that the sustenance of competitive advantage is achieved by strategic focus, i.e., concentrating on what the organization does better than anyone else and sub-contracting other activities to vendors (Lacity and Hirschheim, 1995). Andreu and Ciborra (1996) define a core competence as a competence that draws its importance from the contexts of the marketplace and the organization’s business plan. Under a selective sourcing strategy core competencies can be more finely managed within the IS realm. An IS facility may have competence in their specific operational systems. Organizations are more likely to pay higher wages to retain staff who operate and maintain applications that provide a competitive advantage. Where an organization believes that the application is a commodity, then executives are more likely to consider outsourcing.

Packaged application software such as ERP systems are generally available in the marketplace and will be regarded as a commodity if the organization is not using them in some unique way or otherwise believes them to be a core competence.

The Hunter Group observes that some large enterprises who insure their ERP are turning to the ASP when faced with implementing new modules of a large and complex ERP. This point is also covered in the Technical reasons (Access to new technologies). We include it here because this strategy also allows the IS staff not to be diverted from the systems already in place in which they have established core competencies.

Provide is for start-up companies. Several ASP vendors are targeting their offerings to start-up companies. Some, such as SAPHosting and Brightstar emphasize such benefits as lower cost of entry, rapid implementation and scalable software. These offerings are consistent with Lacity and Hirschheim’s reasons why start-ups evaluate outsourcing. e-Online takes on one start-up company a month, pre-dominantly internet start-ups (sometimes known as dot.coms) because they have developed an industry template for these types of companies. Before accepting them as a customer however, e-Online reviews their business plans to assess their ongoing capacity to sustain the ASP facility. In certain
cases, e-Online have forged other business relationships with these start-ups beyond the ASP contract.

Technical reasons
These are reasons associated with providing effective information systems. They include providing access to specific technical expertise and new technologies, improving technical services and focusing staff on core technical activities. Here we show that ASPs can attract the talent, such as ERP skills, that is otherwise scarce in the marketplace. Further, we suggest that they attract this talent in part by providing access to the latest versions of ERP systems. Further, we discuss how ASP like other outsourcing vendors are able to improve technical service. Little evidence was available to explore the focusing of staff on core technical activities.

Access to technical talent. With the dramatic success of packages such as Baan, Peoplesoft, Oracle, SAP R/3, and others demand for ERP implementation and support resources continues to far outstrip supply. Staff turnover, poaching and drift to other high paying areas, e.g., dot.coms, are continuing issues often causing implementation delays and cost increases. Also, with the loss of these skills and knowledge, the client may be poorly equipped post-implementation, to further evolve their business processes, R/3 system and organization in response to a continually changing environment and to derive advantage from new R/3 releases. SAP and its partners face similar concerns over ERP ‘knowledge drain’ (Gable, Scott, Davenport 1998). Organizations supporting or considering implementing ERP systems face this issue of attraction and retention of staff. All ASPs interviewed saw this as their major advantage over the insourcing alternative. They were attracting clients for reasons such as: internal staff being trained and immediately leaving to earn higher wages consulting, and the cost of their service being lower than the cost of re-training internal staff.

Large outsourcing vendors are able to entice considerable IS skills into their organization. ASPs have an opportunity to provide an attractive technical environment for ERP technicians. By leveraging their expertise over multiple clients they can pay the high wages demanded by these technicians and also establish a community of support among this group. ASPs can, therefore, maintain staff with the capabilities to both implement and upgrade to the latest versions of software. The technical experience gained from the first customer upgrade flows throughout to other customer systems. An ASP can develop specific skills in implementing and upgrading specific ERP systems and in specific industry sectors. They are able to develop and invest in work routines and technical tools thereby achieving core technical capabilities in these areas and gaining competitive advantage as a result (Andreu and Ciborra, 1996). Furthermore, for consultants who wish to swap continual travel to geographically dispersed clients with a single work location, ASP is an attractive alternative.

Access to new technologies. Also, outsourcing companies may employ newer technology than that of their prospective client organization. Better skills and modern infrastructure will attract some companies to outsource IS functions that are perceived to be lacklustre (Timbrell, Hirschheim, Gable and Underwood, 1998). ASPs hold similar advantages to other outsourcing vendors in this regard. ASPs maintain their economies of scale from providing standard offerings. To compete for new ERP ASP client, they must constantly offer the latest versions of the software. For their existing client base this is viewed as a “free” upgrade.

In a recent address, Craig Vayo, General Manager of Corporate Services Agency—an ASP for ERP in Queensland Australia—suggested that if he didn’t upgrade his SAP modules regularly he risked losing staff. ERP support staff are concerned with the currency of their skills because it dictates their employability and market rates. One can conclude a possible link between currency of technology and attraction of qualified staff.

Traditionally ERP, accounting and other ubiquitous, cross-functional systems hinder outsourcing because the information technology cannot be easily isolated. (Lacity, Willcocks and Feeny, 1996). The ASP must be able to provide either a new environment/application software to the customer or have sufficient technical skill to isolate the ERP from often complicated technical environments.

Improve technical service. Some participants in Lacity and Hirschheim’s study were dissatisfied with technical services provided by their in-house IS departments. Late and over budget implementations and poor and untimely support led them to evaluate
outsourcing alternatives (Lacity and Hirschheim, 1993a, 1995). This is consistent with the experiences of ASPs interviewed. e-Online had won two customers based on their poor in-house implementation experiences. The Hunter Group stated that clients were happier with their ASP service because it was predictable (under a service level agreement) and carried out by staff with greater expertise. Also, support staff were more pro-active because they more closely monitored their client installations. e-Online staff are compensated on their customers' satisfaction levels, motivating them to provide high service levels. All ASPs interviewed offered rapid implementation ofERP. ASPs certified by their software vendor are also able to provide back-up technical helpdesk support from their vendor otherwise unavailable directly to customers.

Political reasons

Political issues range through reaction to the efficiency imperative, the need to acquire new resources, reaction to the bandwagon, reducing uncertainty, eliminating a troublesome function and enhancing personal credibility within a corporation. Here we consider the efficiency imperative, the need to acquire new resources, reaction to the bandwagon, and eliminating a troublesome function. There was insufficient evidence to comment on the other attributes. Finally we extend the political dimension by exploring the changing relationships between the software vendor and the ASP.

In examining Lacity and Hirschheim's political reasons for evaluating outsourcing and comparing these with the experiences of large ASPs in the US, it is evident that organizations are using ASPs to provide ERP services for similar reasons to organizations that used general outsourcing vendors in the mid-1990s.

Reaction to the efficiency imperative. An outsourcing tender usually entails benchmarking the internal operations to support the evaluation of outsourcing proposals. An IS manager under pressure may bias this process to demonstrate that outsourcing the IS function will result in negative returns to the organization (Lacity and Hirschheim, 1993a; 1995). Alternately, an IS manager may adopt an ASP model to demonstrate that they are employing the latest market solutions or to escape the risk of managing an ERP implementation and subsequent maintenance and upgrade activities.

The need to acquire new resources. IS management evaluate outsourcing to gain new resources such as machine upgrades, later versions of software, or cash generated from the lower cost models available in the marketplace. ASPs interviewed noted that their customers were looking for up-to-date versions of ERP software running on fast, well maintained machines supported by experts with knowledge of the ERP software as well as industry knowledge. CSC, e-Online and Finematics all offer this as their value proposition.

Reaction to the bandwagon. Vertical industry acceptance will speed the uptake of this alternative outsourcing strategy. In every industry/geography combination there is an important role played by the market leaders. The industry looks to the larger players for guidance in new technology. These industry leaders influence the ASP market. If leaders in the sector make an ASP decision we may see very quick take up by other players in that market. The bandwagon effect conveyed by the media swayed many firms to consider total outsourcing.

In the 1990s the popular press promoted an impression that outsourcing could lead to cost savings in the information systems function. Lacity and Hirschheim (1993a, 1995) maintain that the propensity to only report positive stories about an area is often because negative reports are generally unavailable to the popular press. Companies wish to keep their failures to themselves. This creates an impression in a decision-maker's mind that IS costs are avoidable through outsourcing.

The popular press is acting in a similar fashion with ASPs (Hall, 2000; Gantz, 2000). Early reports are promising, but like total outsourcing, ASP is not a strategy that will provide benefits for all. As a new area, even those firms that have adopted an ASP path are not in a position to evaluate fully the consequences of this model. We must wait to learn from the market what lessons will be learnt from customer experiences with ASP.

Eliminate a troublesome function. In the early 1960s, Massachusetts Blue Cross and Blue Shield's decision to outsource to EDS was triggered by the failure of three major system development projects
(and losses of tens of millions of dollars). It saw outsourcing as a way to fix a broken department. (Applegate, McFarlan and McKenney, 1996; Lacity, 1993a). Here we show that similar occurrences are happening in the ASP market.

Today, an outsourcing decision may arise as a result of a failed packaged application implementation. Large enterprises (LEs) are looking to ASPs as alternatives to long, expensive or problematic ERP implementations and the continuous pressures of upgrades and maintenance. Premier Technologies Inc. in Atlanta were experiencing problems with their Peoplesoft deployment so they outsourced it to ASP TransChannel LLC. Douglas Hadaway, a vice-president of finance, noted that "it became painfully evident that ERP was not one of our core competencies" (Morgan, 1999). Apart from the $3m cost savings over five years, Premier is gaining positive exposure from their partnership with TransChannel and their successful ERP facility. As previously mentioned, e-Online have taken over two clients where the in-house implementation was experiencing problems.

The application of Lacity and Hirschheim's model is summarized in Table 4.

**Vendor/ASP relations**

Politics does not only happen within the firm. The relationship between software vendor, ASP, and client also has a political dimension. Already there are signs of conflict in the sales channel over who owns the customer (Legg Mason Equity Research, 1999). One of the major differences between ERP of the past and the vision for the future through an ASP is that no one organization can operate the sales process on their own. As with any selling, the client relationship will continue to be the most important factor, however the relationship may be through a variety of organizations operating with a common face to the customer.

In the past the ERP vendors competed for business based on richness of functionality, fit to the customer needs, and price. Consulting organization, in many cases, were involved assisting the client with the selection process. Hardware vendors would then typically battle to gain a sale.

The process in the past was largely sequential (Fig. 3).

The future is likely to see a very different model. While functionality will still play an important role in the sale, the Web user interface means that a variety of software can operate "under the covers" while maintaining a common user interface. "Best of breed" models are possible alternative ASP offerings to single vendor software if the issues of integration can be overcome. The successful ASP sellers will be those that are able to offer a complete "unique offering" which brings all the components together under a common banner. The sales process is unlikely to follow a sequential path as in the past. ASP customers will need to be accommodated with all services, hardware, and software prepackaged in a "one stop" solution.

The ASP market will compete not only with other ASPs but also with traditional ERP/CRM sales and implementation. The sellers from both consulting and software vendors will seek to maximize their own sales even if they have an interest in an ASP venture. Oracle has taken this path (Legg Mason Equity Research, 1999). This element of "competing with yourself" will undoubtedly bring a number of conflicts into the ERP/CRM market over the coming few years.

**Marketplace Considerations**

The value proposition for clients and the ability to prove the savings will play an important part in the acceptance of ASP as an alternative to traditional ERP and CRM environments. If the value proposition does stand up under scrutiny, and proves itself in a number of leading firms and in the media, the ASP growth should parallel that of outsourcing in the early nineties. The core market is SMEs, and while cost does not drive all decisions, in the case of ERP and CRM it undoubtedly is a major part of the decision process. Additionally several international factors will affect the take-up of ASP in different countries. We discuss these marketplace issues in this section.

**SMEs or LEs**

While expected growth will be in the small-medium enterprise (SME) market, ASPs in the USA such as SAPHosting, CSC, Hunter Group and e-Online are being approached by large enterprises. SAPHosting, CSC and e-Online all started by targeting SMEs but soon found LEs a willing market. They have now changed their strategy and are targeting LEs as well. One ASP, Hunter Group, commented that LEs were
Table 4. Latour and Hüschheim’s framework applied to ASPs

<table>
<thead>
<tr>
<th>Reason</th>
<th>Attributes</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial</td>
<td>Reduce costs and restructure IS budgets</td>
<td>ASPs can pass cost savings on to clients if they achieve sufficient numbers of clients, use templates and deploy staff effectively across their client base. ASP is a rental model that converts clients’ fluctuating capital outflows into known operating outflows.</td>
</tr>
<tr>
<td></td>
<td>Improve cost control</td>
<td>Service level agreements and fixed charges should diminish excessive user demands, overuse of staff and frivolous changes. Costs are allocated more directly to usage.</td>
</tr>
<tr>
<td>Business reasons</td>
<td>Focus on core competencies</td>
<td>IS managers can outsource applications that are not regarded as providing a competitive advantage.</td>
</tr>
<tr>
<td></td>
<td>Provide IS for start-up companies</td>
<td>Start-ups are using ASP to deploy scalable systems based on industry templates more quickly and cheaply.</td>
</tr>
<tr>
<td>Technical reasons</td>
<td>Access to technical talent</td>
<td>Scarce expertise, such as ERP skills, can be accessed under the ASP model. ASPs have advantages in attracting ERP skills, e.g., diverse client base operating in a single location.</td>
</tr>
<tr>
<td></td>
<td>Access to new technologies</td>
<td>ASPs can upgrade complex systems such as ERP more efficiently through the use of routines and templates. The latest technologies attract scarce technical expertise.</td>
</tr>
<tr>
<td></td>
<td>Improve technical service</td>
<td>Support services with sufficient expertise to provide a predictable timely service sensitive to customer satisfaction levels. Certified ASPs are backed by the software vendor’s expertise.</td>
</tr>
<tr>
<td>Political reasons</td>
<td>Reaction to the efficiency imperative</td>
<td>Local IS managers use ASP to mitigate the risk of poor ERP implementation and maintenance.</td>
</tr>
<tr>
<td></td>
<td>The need to acquire new resources</td>
<td>ASPs believe customers want up-to-date versions of ERP systems working on fast well maintained machines, supported by experts at a lower cost.</td>
</tr>
<tr>
<td></td>
<td>Reaction to the bandwagon</td>
<td>The popular press is currently very positive about the ASP model.</td>
</tr>
<tr>
<td></td>
<td>Eliminate a troublesome function</td>
<td>The ASP model provides management with an alternative to problematic in-house implementations of ERP and the pressure of upgrades.</td>
</tr>
</tbody>
</table>

Using ASP to introduce or trial new ERP modules. Finetitics, who have just commenced trading, are targeting SMEs and are providing other related services, usually unavailable to SMEs as inducement to use their ASP service.

**International considerations**

We now consider business issues such as the domestic and international environment faced by ASPs and their customers. Analysts such as Forrester are predicting dramatic growth for ASP from small beginnings in 1999 of around US$300 million, to a market of more than US$6 billion in 2004. The authors believe that several factors will influence the acceptance of ASP in different countries and industry groups.

The state of maturity of the ERP market in differing countries is an important indicator for the adoption of ERP delivery by ASPs. Countries such as the US, Australia, Canada, UK, Germany are largely
mature markets for traditional ERP. These countries are likely to accept an ASP offering having been through a number of full ERP implementations. Companies generally understand the "total cost of ownership," and appreciate that the ongoing costs are substantial. Countries such as China, Indonesia, parts of South America are still seeing the growth of ERP at rates reminiscent of the mid-1990s in the US and Europe. The cost of labour is also cheaper in these countries, therefore lowering the total cost of ownership to the customer under a traditional model. Companies in these types of economies will be slower to take up ASP.

Telecommunication stability and Internet penetration is an important requirement for the success of the ASP model. This model is dependent on stable telecommunications and sufficient bandwidth to support critical Internet traffic. Advances in telecommunications have not been uniform around the world.

A local market presence will assist ASP Vendors. While it is certainly possible to operate an ASP service offering from any location where reliable telecommunications exist, in the early days of ASP, there will not be a presence to sell in many markets around the globe. ASPs will have to provide some direct contact for their customer base to provide, in example, training or on-site support. e-Online are looking to expand to Europe. They suggest that European customers will insist on a local data center. Subsequently they will establish or buy a data center before operating in the European market.

**Risk**

Risk is an important factor in choosing and managing an ASP. Moving a critical system such as an ERP to an ASP entails significant risk to an organization and to those who take part in the outsourcing decision. In this section we explore an ASP risk continuum and briefly re-visit some of the risk factors established in the outsourcing literature, applying these to the ASP model. Our purpose is to remind potential users of ASPs that outsourcing risk is well documented and should be addressed before employing the ASP model.

**Outsourcing applications services and operational risk**

Given that application provision is a form of outsourcing, the support issues that surround traditional outsourcing also apply to ASPs. Before discussing the ASP model, we suggest that ERP and CRM software is now operating on a continuum that has self

![Diagram](image_url)
managed and installed software on one end through to ASPs on the other. Fig. 4 illustrates how risk for operations (including implementation) shifts from the client organization to the service provider, the more a client moves down a path of outsourcing.

Both the buyer and provider need to understand what the types of risk are transferred and what new risks may arise from an ASP arrangement. For the customer the movement of risk to the ASP is really a shifting of "operating responsibility". It is a subtle yet important difference. The ASP will assume responsibility for getting the new system live, continuing operations, and providing support and upgrades. However, the customer still bears the overall risk of success and the impact on the business. In the event of a disaster, there may be some comfort from litigation against the outsourcer, but financial rewards cannot replace the total loss that may be suffered by a business which cannot move product, or process invoices. The contract between customer and ASP, while not always mitigating risks, should at least provide mechanisms in the event of unforeseen circumstances.

Buyers therefore need to consider carefully the operational capability and strength of the outsourcer service provider. The ASP needs to have solid financial backing, integrated technical infrastructure, and a workforce that is capable of responding to immediate requests. Buyers are also advised to consider what certification or support relationship the ASP has with the vendor whose software it is supplying.

**Outsourcing applications services and business risk**

Having satisfied themselves that the selected ASP will provide operational risk mitigation strategies in place, the purchasers of the ASP's services must look inwardly at the business risks of such an arrangement. The purchaser must understand their capabilities to manage these risks (Earl, 1996; Willcocks, Lacity and Fitzgerald, 1995; Aubert, Patry and Rivard, 1998). Such risk areas include underestimating costs (Earl, 1996) or hidden costs (Aubert, Patry and Rivard, 1998); contract development and management (Aubert, Patry and Rivard, 1998; Willcocks, Lacity and Kern, 1999; Earl, 1996); relationship management; loss of capability (Willcocks, Lacity and Kern, 1999); and loss of flexibility (Lacity and Hirschheim, 1993a, 1995). In their experience the authors have found common problems in outsourcing contracts include rising costs over time, exit strategies, unfettered access to data, integration with other systems, service response times, disaster recovery, and escalation procedures.

Willcocks, Lacity and Kern (1999) distilled the outsourcing literature and identified risk factors for outsourcing. These include treating IT as an undifferentiated commodity; incomplete contracting; lack of active management by the supplier on contract and relationships; failure to build and retain requisite in-house capabilities and skills; power asymmetries developing in the favor of the vendor; dealing with rapid business and technical change; outsourcing for short-term financial restructuring; unrealistic expectations; and poor sourcing and contracting for new technologies.

The outsourcing literature is rich in the analysis of risks associated with outsourcing arrangements. There is an opportunity for research in the area of risk specifically associated with ASP arrangements. Again, users of ASPs should consider these risks when considering this management option.

**Implications and Conclusions**

A strong theme arising from this exploratory study is the role of expertise in the provision of ERP by ASPs. Given that loss of capability by the client is an established risk factor in outsourcing, important future research will encompass the knowledge management dynamics of the ASP model for ERP. Furthermore, how will the ASP model sustain the pressure from clients for more individual configuration, once they have become familiar with potential of the ERP software provided and will such pressure alter the cost model?

We conclude that the ASP market has great potential for the future delivery of ERP packaged software. We believe that the value proposition will stand up to scrutiny offering opportunities of lower lifecycle cost and business advantage to clients. In particular, if skill shortages in the ERP sector continue, firms will continue to seek alternative sources of expertise and technology. While the main perceived target market for ASPs is still small to medium enterprises, ASPs will still find business opportunities in Large Enterprise who wish to introduce new ERP modules.

As telecommunications infrastructure improves in South East Asia and other parts of the world, the ASP
market will broaden as long as there is sufficient local presence to support operations. The ASP market is growing and inevitably, there will be a number of failures. If the press records and reports these failures, the bandwagon effect may reduce.

As the latest popular form of outsourcing, the ASP market should learn from the experience of other forms of outsourcing popularised in the nineties. By doing so, it can mitigate a variety of risks inherent in arrangements of this kind. The authors conclude that the ASP model will succeed because it offers a viable alternative to the in-house management of ERP.

References


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