

Application service providers (ASP): moving downstream to enhance competitive advantage

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Keywords

Application software, Value chain, Competitive advantage, Supply-chain management, Outsourcing

Abstract

The application service provider (ASP) industry is a fairly young entry into the IT and automatic identification and data capture industries. There are various types of ASPs: EASP (Enterprise ASP) provides enterprise-class software and applications such as CRM (customer relationship management) and e-procurement and B2B (business-to-business) exchanges; FSP (full-service provider) provides full service systems integration and IT management services in addition to ASP service; and VASP (vertical ASP) which targets a vertical industry such as a financial services industry. Strategy experts predict that those ASP companies that will not only survive, but will thrive, are those companies that become "business solutions partners" with their customers. ASPs become such partners through enhancing a company's value. Using Porter's generic value chain and cost analysis concepts in the development of competitive advantage, this paper examines and models the nature of how ASPs add their own value to a company's overall competitive strategy by reducing costs within the company's value chain.

Introduction to competitive forces

Porter's competitive advantage

Information technologies (ITs), especially the Internet and the associated automatic identification and data capture systems, are dramatically reshaping the use of human resources and redefining business intelligence. Innovation, both in terms of incremental and radical product designs, is significantly related to the ability to harness new technologies, acquire and retain customers, manage complex products and value supply chains and, more importantly, empowering knowledge workers. For example, Amazon.com has revolutionized the book-selling business. Amazon.com has succeeded based on:

The way it leverages and presents information to customers, not just that it was one of the first companies to sell books via the Web (Hewlett-Packard, 2000, p. 1).

Amazon.com has yet to date to make a profit. Wal-Mart and other retail giants have leveraged information by collecting detailed sales information from each of its stores on a daily basis into a data warehouse and making it available to suppliers who then can proactively restock the retailers' shelves. Internet and automatic data capture systems allow for this transformation to occur – however, an understanding of the strategic competitive forces is extremely important in model building with an e-commerce framework.

The goal of Porter's competitive advantage is to create a bridge between strategy and its actual implementation (Porter, 1985). Porter's competitive strategy concept details issues of an industry, its competitors and then develops an overall strategy. According to Porter (2001), many of the pioneers of Internet business, including dot-coms and

established or more traditional companies, have competed in ways that violated nearly every precept of good strategy. In essence, Porter contends that the process of gaining competitive advantage does not require a radically new approach to business. Instead, it requires building on the proven principles of effective strategic management.

Competitive strategy introduced Porter's five competitive forces that determined industry profitability. These forces include:

- 1 threat of new entrants;
- 2 bargaining power of suppliers;
- 3 bargaining power of buyers;
- 4 threat of substitutes; and
- 5 rivalry among existing firms.

Porter's competitive advantage is a strategically sound explanation of how a firm's competitive approach, using broad generic strategies, can create and maintain a competitive advantage over its competitors. As per Porter, competitive advantage comes from the value that a company can create for its customers. Porter (1985, 1991, 1996) basically defines value as whatever buyers are willing to pay, and superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than offset a higher price. Hence, a company must decide or focus on the type of competitive strategy it wants to adopt – the generic strategies are cost leadership, differentiation, and focus.

A cost leadership strategy involves a company choosing to be the lowest cost producer in its industry. Being able to offer the lowest prices can be the result of economies of scale, proprietary technology or preferential access to raw materials. In a cost leadership strategy, a company's products must be viewed as acceptable substitutes from its competitors. Otherwise, a company's products may be priced lower, but customers



Information Management & Computer Security
10/2 [2002] 64-72

© MCB UP Limited
[ISSN 0968-5227]
[DOI 10.1108/09685220210424113]

The research register for this journal is available at
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will perceive the lower quality and then turn to competitor products.

A differentiation strategy involves a company producing a product uniquely different from its competitors. According to Porter (1985, 1991), the differentiation can be based on the product itself, the delivery system by which it is sold, the marketing approach, and a broad range of related factors. Just because a company may produce a desired and uniquely different product, a company cannot ignore its costs of production. Hence, a differentiator must seek methods of differentiating that lead to a price premium greater than its cost position, since its premium prices will be nullified by a markedly inferior cost position – a differentiator aims at cost parity or proximity relative to its competitors, by reducing cost in all areas that do not directly affect differentiation.

Porter's third generic strategy is focus – a company customizes its strategy solely to serve a narrow segment within an industry. Within the focus strategy, a company can also have a cost focus or a differentiation focus, but leaving room for several sustainable focus strategies in an industry, provided that focusers choose different target segments. Most industries have a variety of segments that involves a different buyer need or a different optimal production or delivery system. In essence, Porter (1985, 1991) suggests that a company that fails to adopt any strategy will find itself stuck in the middle and may have no competitive advantage with below-average performance.

Porter's value chain

Porter (1985, 1991) believes that a company's activities, such as designing, producing, marketing, delivering, and supporting, should be examined independently from one another and even interdependently. Porter's value chain analysis is the tool he uses to demonstrate the contribution made by each company activity to overall competitive advantage. The value chain also helps in understanding cost behavior. Value chain analysis starts with segregating a company's value activities into primary activities and support activities. Value activities are the physically and technologically distinct activities a firm performs

Primary activities

Inbound logistics include activities associated with receiving, storing and disseminating inputs to the product, such as material handling, warehousing, inventory control, vehicle scheduling and returns to the suppliers. Operations usually include activities associated with transforming

inputs into the final product form, such as machining, packaging, assembly, equipment maintenance, testing, printing, and facility operations.

Outbound logistics are essentially activities associated with collecting, storing, and physically distributing the product to buyers, such as finished goods warehousing, material handling, delivery vehicle operation, order processing, and scheduling. Marketing and sales are those activities associated with providing a means by which buyers can purchase the product and inducing them to do so, such as advertising, promotion, sales force, quoting, channel selection, channel relations, and pricing. Finally, service activities associated with providing service to enhance or maintain the value of the product, such as installation, repair, training, supply-chain management activities, and parts-supply and product adjustments.

Support activities

Technology development support activities are activities that include (but are not limited to), component design, feature design, field testing, process engineering and technology selection. Procurement is basic to the function of purchasing inputs used in the firm's value chain, not to the purchased inputs themselves. Human resource management focuses on activities involved in the recruiting, hiring, training, development, and compensation of all types of personnel. The firm infrastructure include activities involving general management, planning, finance, accounting, legal, government affairs and quality management – a firm infrastructure is sometimes viewed only as overhead, but can be a powerful source of competitive advantage.

As mentioned previously, value chain activities are also examined interdependently. Value chain activities are developed interdependently through linkages and interconnectivity within the value chain. Hence, linkages are relationships between the method and viewpoint via which one value activity is performed as compared to the cost or performance of another. What this means is that value activities affect each other – changing the protocol in completing one value chain activity could potentially positively or negatively affect another value chain activity.

Another essential component of gaining sustainable competitive advantage, is how well a company understands the value chains for its suppliers and its buyers. As a firm's product represents a purchased input to the buyer's chain, then differentiation basically derives fundamentally from creating value

for the buyer through a firm's impact on the buyer's value chain. Therefore, value is uniquely created when a firm creates competitive advantage for its buyer – it lowers its buyer's cost or raises its performance.

Value chain activities and cost analysis

In addition to identifying primary and support activities, a company must assign operating costs and assets to its value activities. Operating costs should be assigned to the activities in which they are incurred and the encumbered assets should be assigned to the activities that employ, control or most influence their use. Why is this cost allocation necessary? The allocation of costs and assets will produce a value chain that illustrates in a graphical fashion the distribution of a firm's costs. A company's cost position is the result of the cost behavior of value activities, cost behavior depends on a number of structural factors or cost factors that influence cost. Also, cost drivers can be combined to determine the cost for a given value activity.

According to Porter (1985, 1998) and Gendron *et al.* (2000), there are ten cost drivers. These cost drivers are as follows:

- 1 economies of scale;
- 2 learning;
- 3 the pattern of capacity utilization;
- 4 linkages;
- 5 interrelationships;
- 6 integration;
- 7 timing;
- 8 discretionary policies;
- 9 location; and
- 10 institutional factors.

Porter (1999) also suggested that the only road to have an advantage in the modern business environment is through innovation and improvement. To develop sustainable competitive advantage, it must be illogical or extremely difficult for rivals to match all the competitive activities of a firm or the competition will become mutually destructive. In essence, according to Porter (1999, p. 13), to plot a successful strategic course, firms must be able and willing to:

- set the goal of learning;
- create an environment where people expect change; and
- reconnect with strategy.

The strategic development of application service providers (ASP) among both real and virtual companies is an avenue that would promote such sustainable competitive advantage. One of the major thrusts of the present paper is to discuss the methods that a company's cost drivers are affected by a firm

utilizing an ASP (application service provider).

ASP: overview

An ASP is a company that leases or rents its product – essentially an application – to its clients. It does so via a network, often through a portal or an Internet service provider (ISP). There are various types of ASPs available to modern business practices, including but not limited to, the following:

- EASP (Enterprise ASP) provides enterprise-class software and applications such as CRM (customer relationship management) and e-procurement and B2B (business-to-business) exchanges;
- FSP (full-service provider) provides full service systems integration and IT management services in addition to ASP service; and
- VASP (vertical ASP) targets a vertical industry such as a financial services industry (XyEnterprise.com 2001).

This customer involvement is especially evident in B2B transactions, as these markets have formal dialogue between customer and suppliers, as evident by the business partnering that has been commonplace in most businesses. Communication is a vital element of successful CRM and the Internet allows companies to easily reach millions of customers around the world at a very low cost (Rao *et al.*, 1998). As demonstrated in an article by McDermott (1999), incremental innovation or improvement of pre-existing products and radical product innovation process, involving new technologies or ideas, are largely supported by reliable information technologies and good people – such that the innovation processes enhance the customer/user interface. These innovations or experiments may provide the foundation upon which the next generation of manufactured products may be made. As suggested by McDermott (1999), firms that have large shares in one product generation may not be able to take advantage of the new wave of technologies and innovations and, thus, their existence may be threatened.

The main advantages of utilizing an ASP within an organization that leverages intellectual capital may be summarized by the following:

- ASPs can offer access to applications at lower costs than a company can deliver internally (Giotto, 1999);
- access to high-end applications with little upfront investment (Paul, 2001a, b, c);

- higher performance levels and improved speed of deployment (Giotto, 1999; Paul, 2001a, b, c);
- reduced time to market for new product and services (Tripoli, 2001); and
- ASP customers can focus on their core competencies and let ASP experts manage IT applications (Rubens, cited in Sullivan, 2001).

Some of the disadvantages or concerns in utilizing an ASP, especially without the proper safeguards, include:

- ASPs lack customization of other in-house proprietary applications;
- various ASP companies have gone bankrupt and others, although still in business, may be experiencing financial instability;
- speed, bandwidth and reliability issues;
- infrastructure issues (a company's existing network must be suitable to utilize an ASP); and
- some ASPs aggregate or broker their services to other ASPs (Ticehurst, 2000).

In implementing an ASP, a company must first decide which applications it needs to be formally outsourced. As suggested by Tanenbaum of Guardian Mortgage Documents:

If you can afford downtime, then outsource. If not, then don't (Gittlen, 2000, p. 2).

A company must also assess its infrastructure:

What is needed is tight integration between the application and all layers of the infrastructure – from servers to network operating systems, to databases, to networks (Mears, 2001).

In addition, a company needs to develop a very stringent request for proposal (RFP) and include targets and/or goals for the ASP. These targets should include provisions for response time to emergency and routine calls, maintenance requests and other service needs (Gittlen, 2000).

To be assured ongoing reliability, an ASP will provide its customers with a service level agreement (SLA):

Your ideal ASP should provide reports on how well it's meeting network SLAs and be able to demonstrate compliance with any credits you've arranged for should the SLAs not be met (Korostoff, 2001, p. 2).

Strategically placed SLAs should include enforcement provisions that give the firm the ability to terminate the affected SLA and receive a full refund if the ASP does not deliver what it promised – provisions for system and data security, continuous system availability and a designated person at the

ASP to address service problems (Gittlen, 2000).

ASPs are important to fill technology needs in a convenient manner to build positive relationships and feedback loops between the salesforce and building corporate customer relationships. An ASP that offered salesforce automation (SFA) software may be an obvious solution. However, adopting an ASP model and its subsequent implementation is not always an easy process. An ASP will not offer an immediate panacea:

Believing that ASPs don't need hand-holding is just one of many mistakes IT managers make when they send projects out of house. It is not uncommon for an ASP to send its top talent for the consultation, then substitute less-skilled workers for the actual project (Gittlen, 2000, p. 2).

Good advice concerning ASP implementation comes from Intraware's director of sales information systems (Paul, 2001c). Intraware is an online marketplace for software and IT services. Intraware attempted to outsource its Siebel sales force automation application to SiebelNet, a unit of Siebel Systems that hosts its product through USInternetworking (USi).

In 1999, Intraware's first attempt at ASP implementation failed, however, a second attempt at ASP implementation was completed successfully. Their experience has suggested that consulting is extremely important – one of the major flaws of the first project was Intraware's IT team was too busy to get the salespeople involved in configuring the SFA tool. As a result, the sales processes were unclear and the configuration unusable. Also, using a pilot group first, and getting them comfortable with the application before rolling it out to the rest of the staff are essential first steps in developing usable configurations:

The first users will help the others over the rough spots (Paul, 2001c, p. 3).

It was mentioned earlier that a disadvantage or a concern for the ASP industry is financial instability. The Gartner Group estimates that only 40 per cent of the current ASPs will survive until mid-2002:

The rest will crumble due to inadequate business models, mismatched business partners and failure to execute (Paul, 2001c, p. 3).

Additionally, there have been consolidations occurring among the various ASP companies; however, Amy Mizouras, senior analyst for IDC, notes:

We see most of the consolidations being in the form of companies shutting down, as opposed to mergers and acquisitions (Paul, 2001c, p. 3).

Since financial instability in the ASP industry is a real concern, the best advice is to first do research on ASPs and have an exit strategy with your chosen provider:

If an ASP is facing corporate dissolution, there must be no ambiguity about what happens with the data that you have placed in its care. Not being able to address the data issues is, in my opinion, a nonstarter for an RFP (Bolding, 2001a, p. 2).

Along with various ASPs that have been the victims of bankruptcy, others are top rated in the ASP industry. Some of the top 20 ASPs have been rated as meeting or surpassing the following criteria:

Have ASP and/or Web services as their core business; have a substantial and active customer base; be able to demonstrate proven revenue streams; be innovators within the ASP and/or Web services models and be recognized as a leader by others within the industry (Muse, 2001, p. 2).

For the ASP industry to survive, it must evolve. As suggested by Paul (2001a, p. 1):

The greatest challenge for ASPs is their ability to generate repeat business by developing configuring software that can provide some degree of customization versus a "vanilla box" ASP application.

Others feel that the future success for ASPs will depend upon their ability to service the vertical markets. Mary Johnston Turner, President of Nervewire (a Boston-based provider of e-business strategy and digital business implementation services), suggests that the direction the ASP industry must take to ensure future growth:

- ASPs will find they need to gain scale;
- to deliver consistent mission critical performance;
- to view both end users and connected devices as customers; and
- to sew up key enterprise alliance partners.

Effectively, these net markets and supply chain alliances will become the dominant channels for ASPs. ASPs will become the logical point for application-level customer care, and for supporting data warehousing, data mining, analysis and synthesis, eventually building significant revenue streams around ongoing product monitoring, dispatch and end-user customer care. The best ASPs will become strategic business advisors to their net market and supply chain partners as well as their end customers. Business solutions address the full customer solution, not just those activities that lend themselves to remote support (Turner, 2001).

Still, even as an evolving industry looming with financial instability, there is a strong

argument for the ASP model. According to Landgrave (2001):

While it comes as no surprise that ASPs with bad business models continue to collapse, the interest in ASP technology itself is definitely increasing, as the slowing economy forces companies of all sizes to find ways to cut costs. The ASP shared-services model is still the right answer for a large number of companies.

The ASP value chain

The ASP value chain model as created by Wainwright (2000) (this author's value chain is not the same as Porter's value chain) is an attempt to clarify the different suppliers/sectors in the ASP industry who work together in offering an ASP solution. There are five primary sectors that take part in the ASP value chain. The first three have direct contact with the user, while the remaining two stay in the background, as operators of the Internet computing infrastructure. The five elements include the service integrators – the providers that end-user businesses recognize as ASPs. They usually bring together services for delivery as complete, managed solutions and range in sophistication from enterprise ASPs to Internet portals. In terms of application providers, they create the software and applications from which solutions are eventually assembled and include the software developers and independent software vendors whose products ASPs and service integrators deliver. Access providers usually develop and maintain strategic telecommunication connections which allows users to access the network and include telecommunication providers, Internet service providers and wireless ASPs. Infrastructure operators, on the other hand, inspect the physical background elements of the network and include telecommunication providers who act as the Internet backbone carriers, as well as co-location and hosting providers, who manage Internet data center facilities. Infrastructure service providers usually form the software and services layer of the Internet computing infrastructure, and include application and ASP infrastructure providers (AIPs), who operate hosting centers that are specially equipped for application hosting. In addition, management services providers who specialize in remote management of IT systems are another fast-growing group in this category.

The ASP model and Porter's value chain

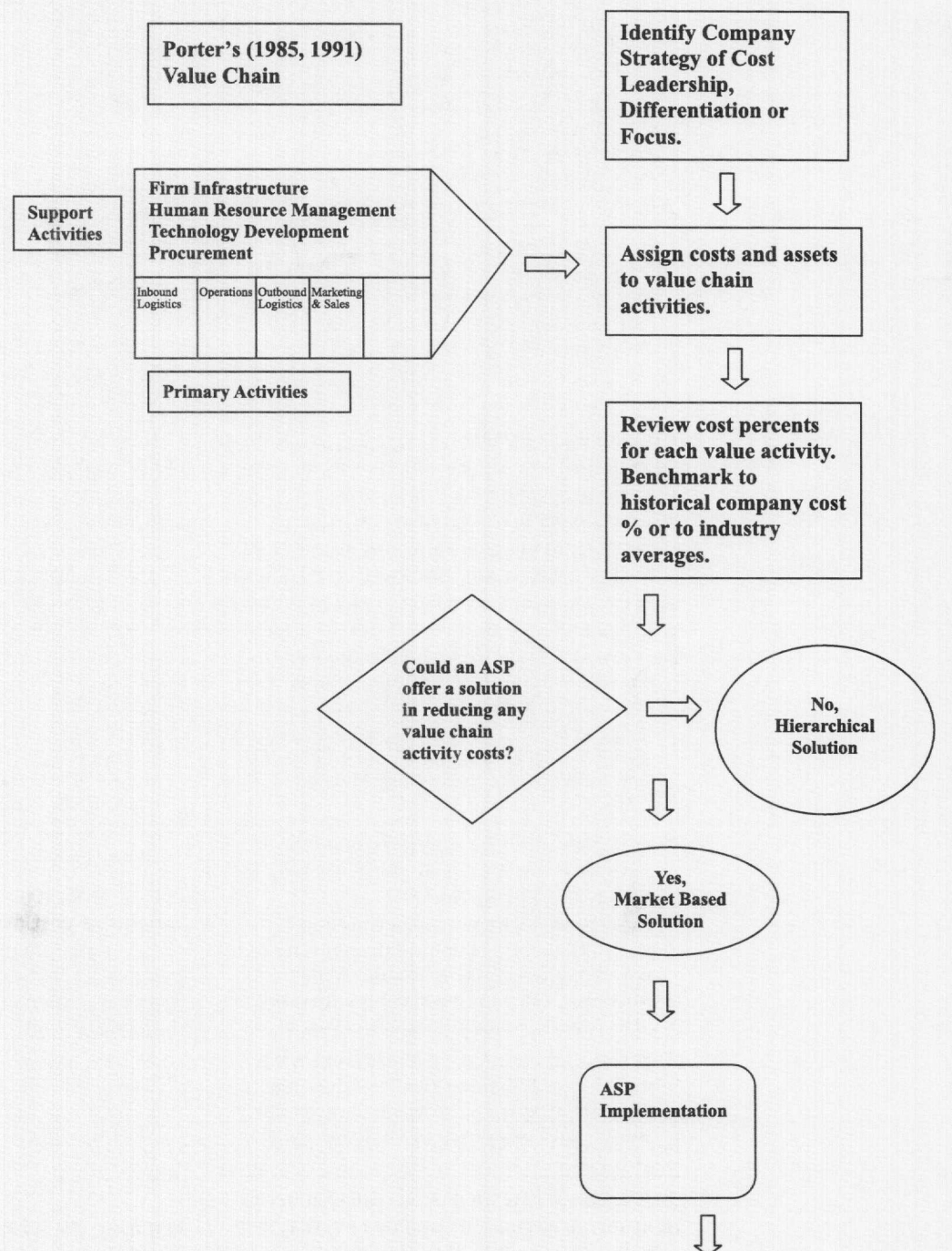
Adoption of the ASP model can be supported by Porter's value chain analysis (see Figure 1).

The ASP model supports a cost leadership strategy. Due to the resulting reduction of value activity costs following ASP implementation, a company can strengthen its competitive advantage by producing or delivering its product at a cost below the industry average. Thus, an ASP model would help a company in its strategic vision in becoming or maintaining a position of low-cost leadership. The ASP model affects a

company's cost drivers. For example, it has been said that utilizing an ASP can get a product to market faster. Timing is one of the cost drivers named by Porter (1985, 1991, 1998). Sometimes a firm may gain first-mover advantages from being among the first to take a particular action.

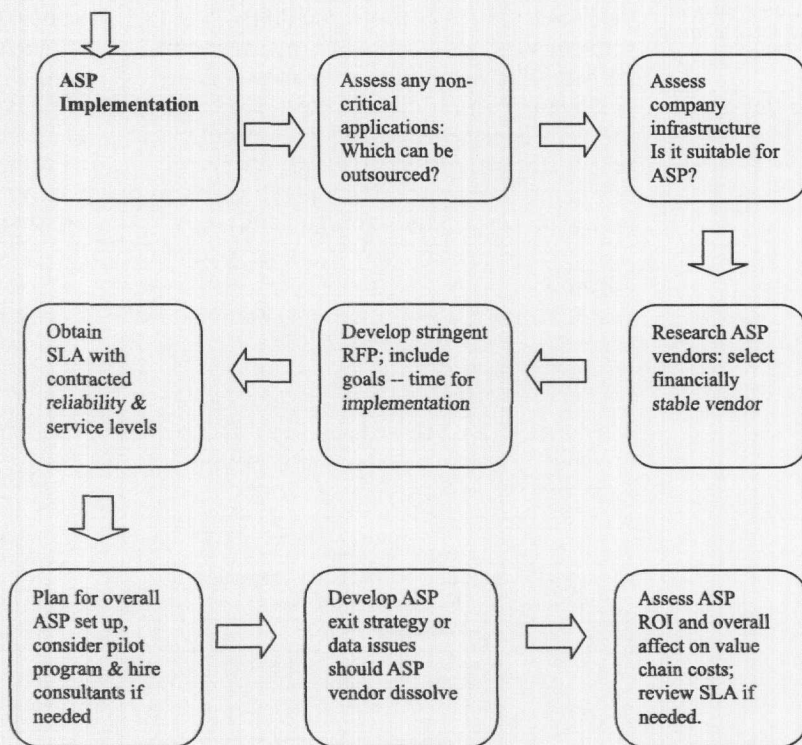
Porter (1985) also suggested that a value activity's cost is subject to economies of scale – economies of scale not only reflect the

Figure 1
Porter's (1985, 1991) generic value chain and ASP adoption/implementation model



(continued)

Figure 1



technology in a value activity but the manner in which a firm chooses to operate it as well. If a company can procure its raw materials more efficiently via a portal or Internet services provider, using e-procurement ASP software, then production costs are reduced along with inventory costs – as less inventory will have to be kept on hand due to improved timeliness in raw materials ordering:

Electronic commerce can alter the virtual value chain by redefining economies of scale, allowing small companies to achieve low unit costs for products and services in markets dominated by big companies (McDonald, 1996, p. 19).

Further enhancing economies of scale, e-commerce via ASP providers can help to reduce transactions costs:

These days, technologies have reduced the transaction costs of using external companies to do business and this has facilitated practices such as outsourcing non-strategic tasks (MobileOutsourcing.com, 2001, p. 2).

IT managers will use application service providers only if users can't tell the difference between an application hosted across the country and one down the hill (Korostoff, 2001, p. 2).

This is mentioned to discuss the cost driver – location. As suggested by Porter (1985, 1991), significant opportunities exist for reducing cost through relocating value activities and/

or by establishing new patterns of location of facilities relative to each other. Through outsourcing an application via an ASP, location costs are reduced. In addition, ASP implementation can lead to reduced costs for IT staff and negate the need for large upfront investments for in-house software and equipment. For example, Putnam Lovell Securities decided on a CRM ASP solution over the decision to take CRM in-house:

Putnam had considered going with a traditional in-house client/server application for its CRM needs. However, the company was a bit “nervous about ROI” with such an investment, ranging from \$500,000 to \$2 million for the complete life-cycle package (Fonseca, 2001, p. 17).

Porter (1985, 1991) also lists discretionary policies as cost drivers. Porter further suggests that some of these choices have the greatest impact on cost. Included among these discretionary policies are:

- delivery time;
- level of service provided;
- channels employed;
- procedures for scheduling production;
- maintenance;
- the salesforce; and
- other activities.

Adopting the ASP model can reduce various value chain activity costs – those arising from discretionary policies. For example,

ASP implementation can offer solutions for salesforce automation. As just mentioned, for Putnam Lovell Securities, a CRM ASP offered solutions for improved customer support. Also, ASPs claim to improve speed of deployment and higher levels of performance. Again, these examples demonstrate that adopting the ASP model can help a company in reducing its value activity costs, thus positively affecting a firm's value chain and overall competitive advantage.

Porter's generic value chain integrated into an ASP adoption/implementation model

Displayed in Figure 1 is a conceptual flow model developed to help a company determine whether or not an ASP could provide a solution or an improvement in its value chain.

General implications and recommendations

Porter's value chain analysis purports that by understanding the cost drivers that influence value chain activity costs, a firm is in a better position to reduce those costs. By reducing costs, a company supports its overall generic strategy of cost leadership, differentiation or focus. In general, many ASPs typically choose to control their operations from a back end data center, and many ASPs are also adding help desk services to make these offerings a completely turn-key operation. There are several companies dedicated to offering value chain management services via e-business solutions (Bolding, 2001a, b; Wainwright, 2000). The resulting ASP model (Figure 1) is essentially a form of outsourcing:

Companies can benefit from outsourcing because transferring the burden of problem resolution closest to those people with the greatest level of the relevant expertise and other resources can reduce transaction costs (MobileOutsourcing.com 2001).

Another reason for utilizing an ASP is timeliness in responding to a problem or finding a needed solution:

The time it takes to get a solution up and running is a critical reason for selecting an ASP option vs. deploying an in-house solution (Bolding, 2001a, p. 2).

Basically, the rule for outsourcing is that if the activity is strategic, it should not be outsourced. Certainly from a strategic viewpoint, companies should retain in-house those activities that differentiate them from their competitors. Thus, for non-strategic

activities, ASPs offer the ability for a company to focus on its core competencies, reduce value chain activity costs and enhance overall competitive advantage.

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