A decision framework for SME Information Technology (IT) managers: Factors for evaluating whether to outsource internal applications to Application Service Providers

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ABSTRACT

Businesses have been seeking new ways to improve their Information Technology that will better fit the company's needs with limited investment or even cost cutting. In order to achieve this many businesses have been turning toward Application Service Providers (ASPs). There are a number of factors supporting ASPs. ASP's can provide one service that connects multiple applications through one access point. The technology is very simple, straightforward, and easy to use for various businesses. There are also factors that do not favor ASPs, including service reliability, customization, integration, upgrades, and security issues. This study examines the paradigm shift from the traditional software model to the ASP model, and explores the favorable and unfavorable trends in ASPs. While the on-demand model seems to be a promising model for companies, there are certainly many decisions for a business to consider before making commitments to an ASP. Hence, this study aims to help IT managers evaluate each factor very carefully before outsourcing their internal applications to ASPs. It develops and provides a methodology for better IT decision-making with regard to ASPs which could be provided to other IT decisions as well. As "cloud" technologies, exemplified by ASPs, transform the world we live-in, better decision-making tools for small businesses will impact their success in the 21st century business world where SMEs can effectively compete with large businesses leveraging these services.

1. Introduction

In today's global market, most industries use Information and Communication Technologies (ICT) to provide valuable, timely, and accurate information in order to stay competitive and to make informed decisions. Moreover, businesses, particularly Small and Medium Enterprises (SMEs), have been discovering new ways to improve their IT that will better fit the company's needs with limited investment. In order to achieve this many SMEs have been turning toward Application Service Providers (ASPs).

Over the past decade, various aspects of organizations have become automated, digitized, and integrated in systems. Furthermore, challenges in integrating systems across functional and physical units are met by the implementation of enterprise-wide applications such as supply chain management systems, customer relationship management systems, and knowledge management systems. Such large-scale applications are complex and hard to maintain, thus many firms are beginning to recognize the benefits of the ASP model over the traditional software model.

Although IT departments would probably favor the traditional software model because of the higher level of control they can assert over the application itself, a business needs to make its decisions based on whether the

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application supports a core or context function of the business. Many industry leaders are in favor of the "insource the core and outsource the rest" [25] philosophy when it comes to deciding on which applications should be kept in-house and which may be outsourced to on-demand service providers.

Numerous IT experts have been predicting that there are factors that favor ASPs. However, there are those who claim that there are unfavorable factors in using ASPs. This study examines the paradigm shift that has begun due to the change in delivery methods from the traditional software model to the ASP model, and explores the favorable and unfavorable factors in using services and applications offered by ASPs. Hence, the purpose of this study is to provide a framework for making decisions in terms of moving toward the ASP model through an analysis of the factors that are most important to likely adopters.

2. Literature review

An ASP is a business that provides computer-based services to customers over a network usually in the form of a subscription [23]. In its simplest form, an ASP provides access to a specific software application program over a public network such as the Internet, using HTTP as a standard protocol. Software offered using an ASP model is also sometimes referred to as on-demand software or software as a service (SaaS) [7,8,49].

Over the past few years, there has been a revival of the ASP model through the notion of cloud computing [2]. The cloud computing, which is a service oriented computing, emerges as a new computing paradigm which aims to provide dynamic computing environments for end-users. The cloud computing can be defined as clouds, or clusters of distributed computers that provide on-demand resources and services over a network, usually the Internet, with the scale and reliability of a data center [16]. At the core of cloud computing is a simple concept: software as a service, or SaaS [12].

Since its conception, outsourcing has become more popular in the modern business environment, thus rising demand for ASPs has evolved as the cost of specialized business software has grown significantly over time. It is no wonder that a report by the Gartner Group states that utility providers such as the ASPs will hold 25 percent of the total IT services market by the year 2011 [20].

The ASP business model as we now know became established in the late 90's with the proliferation of the Internet [41]. By 2002/2003, industry analysts observed that there was around a 90 percent failure rate in this market [17] but there has been tremendous market growth for ASPs in the past 10 years. As [24] suggest, ASP has the potential to fundamentally change the manner in which IT services are provided for user firms.

There are four different forms of providers in the ASP market, which are a specialist or functional ASP [40], vertical market ASP [30], an enterprise ASP [11], and a local ASP [14]. The specialist ASP delivers a single application, for example, a credit card payment processing. The vertical market ASP delivers a solution package for a specific customer type. An enterprise ASP delivers a broad spectrum of solutions whereas a local ASP delivers small business services within a limited area [14].

ASPs are expected to meet certain criteria. For example [24,31] speak of features, availability, reliability, assurance, empathy, conformity, security, system quality, and information quality as the dimensions of service quality for the ASP industry. In addition, for the ASP model to become the computing industry's mainstream paradigm, ASPs must make significant breakthroughs in networking infrastructure, computing technologies, and rental-based cost models and financial services [46]. These factors are important to the model as they are the main success factors for ASP-based information systems, as suggested by [28].

Clients for ASP services include businesses, government organizations, and non-profit organizations [4,42]. Although, these services have traditionally targeted larger companies instead of SMEs [2], ASPs are especially helpful for SMEs, which are not generally able to afford the implementation of expensive and complicated information systems (IS) [27]. The ASP model provides such benefits to SMEs as lower costs, greater choice, simpler installation, and the ability to access applications from any internet-connected computer. ASP subscribers often receive "24 by 7" technical support. This access to IT expertise results in further savings for businesses [2]. By using the on-demand model, SMEs can not only harness the expertise of application vendors, but also save on resources that would otherwise be dedicated to maintaining and supporting the application. Indeed, according to [46]; ASP software's ability to overcome the lack of in-house expertise proved more than twice as important as any other factor. The author further suggests that businesses can save on resources because the ASP software can be used immediately, bypassing the time-consuming client installation. Having the software configured to meet specific requirements provides extra value. In addition, users don't need to employ expensive administration and support staff to operate complex software installations and the equipment required to run them.

3. Research method

We employed a research method which was based on a review of the scientific literature. The key issues associated with ASPs were investigated and presented using academic research and a literature meta-analysis.

We examined numerous articles published containing the words: "Application Service Provider" and "Small and Medium Enterprise". The research was conducted using Google Scholar and sciencedirect.com. Once the information was retrieved, each article was analyzed in terms of the issues and challenges of ASPs. The studies we examined did not present their findings in terms of "favorable" and "unfavorable" factors. Rather, they evaluated various technical and social aspects of using an ASP. We then further analyzed the issues and challenges of ASPs and sorted them as "favorable" and "unfavorable" factors according to criteria developed through academic studies and industry reports. Once each factor was identified, we elaborated more on each one to provide SME IT managers with a comprehensive coverage.