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Abstract

The term Application Service Provision (ASP) emerged in 1998 and since then the ASP Model has experienced varying degrees of adoption success by organizations. This paper presents the results of a study of four organizations that have adopted the ASP Model. Collectively, these organizations have experienced many problems and solutions in relation to ASP adoption and these experiences are captured in a set of organizational prerequisites. The researchers believe that these prerequisites could potentially be used by organizations to internally assess and identify issues that require attention prior to ASP adoption.

1   Introduction

IS/IT outsourcing is neither a new phenomenon, nor is it homogeneous (Loh and Venkatraman, 1991). The outsourcing of IS/IT has been an important topic in the literature since the early 1990's. The earliest academic writing on IS/IT outsourcing is generally credited to an article by Dearden (1987), which appeared in a special edition of the Sloan Management Review. The topic of IS/IT outsourcing then lay dormant in terms of academic literature publication for some time, although a review of literature carried out by Loh and Venkatraman (1992a, 1992b) identified that in the late 1980's it was actively being discussed in the trade press (Rousse, 2002). The rapid growth of IS/IT outsourcing to an estimated global market share of US$99 billion in 1998 and US$120 billion in 2002 with an annual growth rate of 16% in the 1997-2002 period (Walker, 1996; Willcocks and Lacity, 2000) has ensured that it attains extensive, on-going, world-wide business attention (Willcocks *et al.*, 1999).

New entrants in the outsourcing market, offering new types of arrangements, blur the lines between traditional outsourcing companies, Internet Service Providers and software vendors (Aubert and Rivard, 2000). New computing technologies such as the advent of the Internet, new business models, profound changes in global economies, and most importantly, new business and market realities have created powerful drivers and potent

enablers for this renaissance of outsourcing (Factor, 2002). The rapid changes in technological base and the increasingly competitive environment have caused a shift in focus of IS/IT outsourcing strategies from technology to information utilisation and management (Grover and Teng, 1995). It can be argued that this trend has certainly influenced the emergence and increased utilisation of service providers as a way of outsourcing.

1.1   Positioning The Emergence Of ASP

There are various kinds of outsourcing arrangements, which reflects the broad range and depth of services being outsourced. According to Loh and Venkatraman (1991) these arrangements can cater for low internalisation of 'Human Resources' and 'Technological Resources' (complete outsourcing) to high (complete in-house operations). The transition from 'traditional' IS/IT outsourcing and other 'legacy forms' of outsourcing to the service providers is evolutionary (Factor, 2002). A collection of service providers exists, and each service provider is classified under a different name of xSP, where "x" denotes any type of a service provider for example ISP stands for Internet Service Provider and provides network access and application services; SSP stands for Storage Service Provider which provides data storage and backup services. The traditional IS/IT outsourcing arrangement is based on a one to one relationship between the service provider and the customer. Services have begun to exploit the rapid development of the Internet by using it as a source for software distribution based on a model that promotes a *'one service provider to many customers'* outsourcing relationship (Tebboune *et al.* 2002). Against this background, the Application Service Provision concept was born in 1998, and since then, multiple variations of the fundamental 'one-to-many' ASP relationship structure that exists between the service provider and the client (adopting organisation) have emerged. For example, as suggested by Sammon *et al.* (2003), there are two generations of the ASP Model in existence. The first generation traditionally uses third generation software from ISVs, whose software was not initially designed for the Internet, whereas the second generation have organically developed proprietary software specific to the Internet, encapsulating a hosted services methodology, and it is this newly emerging second generation ASP model that appears to be gaining substantial customer momentum.

The understanding of the ASP acronym is not uniform and different definitions exist, however, the concept of ASP proposes a set of common characteristics (Currie, 2003; Sammon *et al.,* 2003) such as (1) a sub-set of the wider e-commerce domain - employs the Internet as a low cost delivery mechanism, (2) web-enabled software applications/software-as-a-service, (3) pay-as-you-go (subscription-based) pricing model, (4) 24x7 access and support, (5) remote hosting/centrally managed facility, and (6) one or more vendors. Furthermore, various forms of ASP Application Model exist, such as, Messaging ASP, Business Process ASP, ERP/CRM ASP, and E-Commerce ASP, where each classification differs in terms of services and applications provided (Sammon *et al.*, 2003).

2   Factors Affecting ASP Adoption

Available literature is divided regarding the relationship between ASP and traditional IS/IT outsourcing. It is argued that while ASP is an electronic outsourcing solution, there

are in fact many similarities, with more traditional IS/IT outsourcing practices (Kern *et al*., 2002a; MetaGroup, 1999). However, some believe ASP is just the facilities management and service bureau of the past (Tebbourne *et al*., 2002). If one accepts that ASP is a derivative of traditional IS/IT outsourcing then it can be analysed in the context of IS/IT outsourcing (MetaGroup, 1999), however, limiting ASP adoption criteria to only include IS/IT costs can undermine the value-added services and business understanding offered through ASP (IDC, 2000). Furthermore, Patnayakuni and Seth (2001) state that ASP is fundamentally different from IS/IT outsourcing, with some of the major differences centred around application delivery, the nature of the relationship and customisation.

Many of the conventional problems with conventional IS/IT outsourcing do not disappear with ASP outsourcing (Patnayakuni and Seth, 2001). Patnayakuni and Seth (2001) proposed a research model that considers some of the factors that influence the adoption of ASP. Patnayakuni and Seth (2001) apply theories that are relevant to IS/IT outsourcing and suggest the implications of these theories for ASP. The prominent issues are categorized into: '*Organization*, *Application*, *Industry* and *ASP*' characteristics. The limitation of this research model is that it was never empirically tested and needs to be refined further (Patnayakuni and Seth, 2001). Therefore, we propose that the Patnayakuni and Seth (2001) understanding of *ASP* characteristics maybe refined and referred to as *Vendor* and *Contract* Characteristics. *Vendor* characteristics are deemed important for ASP by Kakabadase *et al*. (2001); Susarla *et al*., (2001); Thomsen (2001); Jayatilaka *et al*., (2002), and Currie (2003), and *Contract* characteristics are deemed critical by Thomsen (2001), Kern *et al*., (2002a, b), Seltsikas and Currie (2002), and Currie (2003), but were omitted by Patnayakuni and Seth (2001). As a result, five characteristics are highlighted in this research study as critical issues, which affect the adoption of ASP. These are: *Organisational*, *Industrial*, *Vendor*, *Application* and *Contract* Characteristics.

Each characteristic is defined and explained, and forms the foundation of the research model, as illustrated in Table 2. The characteristics have certain associated critical issues, which have been documented and refined from other advocates proposed models (Patnayakuni and Seth, 2001; Thomsen, 2001; Currie, 2003); previous causes of documented failures (Sabharwal and Moore, 2000; Tao, 2000) and factors highlighted as critical to the successful adoption of ASP (ITAA, 2000; Chen and Gant, 2001; Kakabadse *et al*., 2001; Susarla *et al*., 2001; Jayatilaka *et al*., 2002; Kern *et al*., 2002a, 2002b; Seltsikas and Currie, 2002; Peterson and Fairchild, 2003; Sammon *et al*., 2003).

3   Research Approach

As a result of the recent emergence of ASP to the area of IS, comprehensive and in-depth research has not yet been undertaken (Sammon *et al*., 2003). According to Susarla *et al*. (2003) "in spite of the promise and potential of improving the way organizations develop, operate and maintain information technology (IT) applications, application service providers (ASPs) have fared poorly in terms of attracting a large client base. Anecdotal evidence in the business press points to limited satisfaction among users of ASP." The objective of this study is to "generate a set of organizational prerequisites for the adoption of Application Service Provision". To satisfy this research objective, research questions were formulated to determine how and why certain critical issues affected ASP adoption. Specifically, these issues relate to a technical dimension (Vendor, Application, and Contract characteristics) and a non-technical dimension (Organizational, and Industrial characteristics), as illustrated in Table 2. As a result, the findings of this study provide

decision makers, responsible for ASP adoption, with an ability to internally assess the suitability of their organization for such an initiative.

Due to the exploratory nature of the study, a multiple case study research design was chosen. The rationale used was that the ASP Model is a completely new way of delivering and implementing software applications to organisations and experienced users of the ASP Model would have the implementation experience necessary to be able to explain the issues that they consider critical to the successful adoption of an ASP Application Model. The comparison of these issues across different organisations would lead to the foundation of an organizational prerequisites model for ASP adoption. The case study approach is considered appropriate as it allows the researchers to probe the relationship between adoption variables and implementation in more depth than other research methods. The four organisations studied were purposefully chosen to provide a breadth of implementation experience. However, the biggest problem experienced by the researchers was selecting organisations who had adopted an ASP Application Model, due in no small part to the fact that the ASP market is in its infancy. For example, the rate of adoption of the ASP Model by Irish indigenous and multi-national subsidiary organisations is extremely low. Although these organisations represent a minority of industrial sectors, (an issue which is currently being addressed by further studies), the researchers believe that the collective experiences of the adopting organisations is sufficient ground to lay the foundations for the proposed organizational prerequisites model for ASP adoption.

The primary data collection methods used for the study were semi-structured interviews, with key decision makers (regarding the ASP Application Model adoption), and document analysis. The decision makers were interviewed over a six-month period in 2003. Each interview was semi-structured to facilitate an examination of the organisations experiences in relation to the issues identified, as well as a consideration of other aspects of the organisations ASP initiative.

4   Cases Of ASP Adoption

This section introduces the four organizations that have adopted an ASP Application Model. Each organization is introduced, giving a brief description of their characteristics within the industry in which they compete. Their individual reasons for adopting an ASP Application Model are also outlined. Table 1 describes the characteristics of the four organizations (ASP users) that have been studied. The case descriptions are structured along four dimensions (ASP Services, Industry, Total Staff, and Main Adoption Drivers) to provide an insight into the similarities and differences between the cases.

Table 1: *ASP Client Characteristics*

Dimensions Company Name	ASP Services	Industry	Total Staff	Main Adoption Drivers
Pigsback.com	Content Services: Web-Site Hosting	Marketing	2 sites Management: 6 IS/IT: 4 Business: 15	Lack of Resources Lack of Time Market 'Hype'
Buzzgolf.com	Transactional: B2B e-commerce	Golf	1 site Management: 3 IS/IT: 3 Business: 3	Access to Best of Breed Technologies Scalability of Services Minimise Total Cost of Ownership (TCO)
Guinness Webstore	Content Services: Web-Site Hosting	Merchandise	1 site Management: 4 IS/IT: 3 Business: 7	Ensure 100% Availability Provide External Hosting and Technical Support Lack of IS/IT Personnel
Beacon Travel	Enterprise Automation: ERP, SCM, CRM	Travel	7 sites Management: 1 IS/IT: 0 Business: 60	Shortage of IS/IT Staff Scalability of Services Increase Focus on Core Competencies

4.1 Pigsback.com

Launched in July 2000 under the trading name of Empathy Marketing, Pigsback.com is Ireland's first personalised offers and rewards website. According to their business goal:

> Pigsback aims to bring consumers and brands together for mutual reward
> (www.pigsback.com)

Pigsback enables its 170,000 members to download money-off vouchers from a range of brands and access special deals. Users accumulate "PiggyPoints" from availing of offers, or shopping online, at the site's store. The company has built a strong management team and currently employs 25 people in offices in Dublin and Belfast. The company models itself on having five major critical success factors, as follows: Right Partners – 'Your Mafia'; Right Employees; ASP Solution; Pigsback.com Brand; Pioneering Brands.

The Pigsback website was developed by the company's technology partners Octagon Technologies and NewWorld IQ. The website development was performed by Octagon Technologies, while NewWorld IQ, formally NewWorld Commerce, provided Pigsback's e-Marketing campaign management solution. This solution was called NewWorld Direct and was delivered through the ASP Model. This entailed bespoke software development for added features, such as the "PiggyPoints" rewards programme and "Shopping Savings", which is the Pigsback.com secure coupon solution. The ASP solution was used as a customer acquisition tool by Pigsback, enabling the Irish e-commerce website to acquire 30,000 registered members in three months. The e-Marketing solution enabled

Pigsback to conduct campaigns via interactive marketing campaign websites and email communications. It provided sophisticated targeting and detailed measurement to maximise return on investment. Furthermore, NewWorld IQ provides expert e-Marketing knowledge, tactical and strategic implementation, and user support to deliver sustainable value.

4.2   Buzzgolf.com

BuzzGolf was launched in June 2000 and is now both an ASP user and service provider. Based in Wicklow Town, it claims to be the leading European provider of Internet-based e-commerce solutions and the first B2B e-business golf marketplace in the rapidly expanding golf industry. According to their business goal:

> Buzzgolf provides a range of on-line services for all members of the
> European Golf Community. This includes: Manufacturers, Distributors,
> Retailers, Golf Pro's, Green Keepers and Club Secretaries through to the
> amateur Golfer (www.buzzgolf.com)

At present there are 6 employees at Buzzgolf; 3 IT, 2 Sales and 1 Administration. Buzzgolf offers buyers (retail outlets, professional shops, greens keepers, and clubhouse mangers) and suppliers a cost efficient technology platform, which streamlines the ordering process and supports intelligent communication. It was decided that a web-based ASP solution would be very cost-efficient for procuring business because there are so many small businesses remotely located. For example, 4,000 golf professional and retailers, and 6,000 golf courses throughout Europe. The ASP provider, Softco, had already developed a product for the print industry called Printorigin.com that creates an online buying environment and allows buyers to aggregate all of their suppliers' offerings in a single product catalogue. Buzzgolf tapped into this product, customised it, marketed their idea to the golf industry and used Softco's ASP service to develop and host Buzzgolfs product. Therefore, the Softco e-business architecture, Softco Marketplace, provides the foundation for a suite of integrated e-Procurement, Payables, Supplier and Marketside applications, allowing Buzzgolf.com to reap the benefits of becoming a 'Net Market-Maker'. Buzzgolf looked at other solution providers like Ariba and Commerce-One but these were based on a traditional in-house implementation and the costs were enormous compared to Softco's model. Buzzgolf identify the benefits of using ASP as: zero upfront IS/IT investment, zero IS/IT management costs and significantly reduced cost of ownership.

4.3   Guinness WebStore

The Guinness WebStore is Guinness's online merchandise shop. Launched in September 2000, in the midst of the 'dotcom boom', moving the mail order system to an online operation was an excellent opportunity for both Diageo and Guinness to move into the dotcom arena. According to their business goal:

> The Guinness WebStore , the official source for Guinness merchandise,
> serves customers around the world from the St. James's Gate Brewery in
> Dublin, Ireland (www.guinness-webstore.com)

The company has identified adopters and adorers, primarily male, between 25 and 34, as their prime purchasing audience. 70% of sales are currently generated from the US, with 25% from the UK. Investment in the Guinness WebStore has continuously been evaluated against potential expected sales.

In March 2000 the contract to design the site was awarded to an external company, NUA. This site development primarily highlighted issues surrounding the Guinness WebStore, and the resolution of most of these issues was heavily legal and finance-based, as this was unchartered water for both Guinness and the Diageo group. After two months of testing, the site went live to UK and Ireland on September 11th 2000. Upon completion of the site design, the Guinness WebStore decided that the Application Service Provision (ASP) Model would suit its operation best. This would ensure 100% availability, and provide external hosting and technical support.

4.4   *Beacon Travel*

Formerly known as West Cork Travel World Choice, Beacon has 7 offices in Ireland based in Clonakilty, Bantry, Cork, Skibbereen, Dún Laoighre, Limerick and Shannon. Beacon was formed in 1966 and is one of the leading Irish travel companies for corporate and leisure travel. According to the business goal:

> Three divisions in one group [Beacon Travel Worldchoice, Beacon Conference and Incentive, and Beacon Travel Management] - a family business, which has grown internationally and combines youth and experience as well as traditional and emerging technologies (www.beacontravel.ie)

In total Beacon Travel World Choice employs 60 staff and has no IT specialist in-house as it has outsourced all of its IT systems. In early 2000 the decision was made to look at new ways of running their I.T. network. Previously, the IT systems in place were run by Galileo who were leading experts in online travel booking and ticket purchasing. If all of the offices wanted to log into the Galileo system, which was the corporate booking system for buying tickets, they had their own connection to the system. What Beacon required was a giant database of travel agents and airlines with the airlines providing their seat availability and Beacon accessing the database with a view to finding that information. The fact that Beacon was considering expanding and acquiring new businesses countrywide meant that a new IT system had to be compatible to widespread requirements such as multiple user access.

Management made the decision to outsource their IT infrastructure to enable them to focus on core strategic issues. They looked at other travel industry solution providers but opted for the Amadeus 'one-stop-shop' solution, operating out of Germany. Cap Gemini Ernst & Young (CGEY), IT Services and Management Consultants, were involved in several areas of the ASP implementation. CGEY helped Beacon in selecting most of the applications, project-managed the implementation of the infrastructure and managed the network.

5 Organizational Prerequisites For ASP Adoption

From the experiences of the four organizations studied, a set of organizational prerequisites were extracted. Rather than giving an account of the experience of all organizations in relation to each prerequisite, each prerequisite is illustrated using salient data from one or two organizations, in an effort to explain the underlying concepts.

Table 2: ASP Adoption Experience In The Organizations Studied

	Critical Issue	Important Issue	Not an Issue
Technical Dimensions			
Vendor			
Credibility/Reputation	**A,B,C,D**		
Financial Viability			**A,B,C,D**
Support Offered	**C,D**	**A,B**	
Experience		**A,B,C,D**	
Trust	**A,B,C,D**		
Application			
Criticality of the Application	**A,B,C**		**D**
Functionality	**A,B**	**D**	**C**
Customisation	**A,B**		**C,D**
Compatibility/Integration	**D**	**A,B**	**C**
Scalability	**B,D**	**A**	**C**
Contract			
Service Level Agreement	**A,B,C,D**		
Availability	**C**	**A,B**	**D**
Quality of Service		**A,C**	**B,D**
Application Upgrades			**A,B,C,D**
Non-Technical Dimensions			
Organizational			
Management Capability	**A,C**	**B**	**D**
Organisational Support	**B**	**C**	**A,D**
Skills and IS/IT Capability/ Consultants	**A,B,C,D**		
Efficiency and Financial Issues	**B,D**	**A**	**C**
Political			**A,B,C,D**
Access to Potential Providers		**A,D**	**B,C**
Size	**A,C,D**	**B**	
Industrial			
Environmental Uncertainty		**D**	**A,B,C**
Institutional Pressures	**D**	**B,C**	**A**
Knowledge of the ASP Industry	**A,C**	**B**	**D**

A Pigsback.com   **B** Buzzgolf.com   **C** Guinness Webstore **D** Beacon Travel

5.1 Form A Strategic, Trusting Partnership With Multiple Service Providers

Credibility/Reputation and Trust are ranked as the most critical vendor issues by the four organizations studied, and are vital to ensure that the organization can depend on the service provider(s) to provide the level of service guaranteed in the SLA. The CTO of Pigsback.com states that:

> history, from a business point of view, of being in that market is critical. I would be very nervous of starting out with a new company. They say that they can provide you with this and provide you with that but have no track record.

Furthermore, The CTO believes that establishing trust is the basis of any strategic partnership between a service provider and ASP user. The ability to rely on a provider to deliver the service as contracted, without monitoring every move is paramount. The CTO believes that:

> promises made by some companies are not always backed up with the quality of the services. Trust is crucial because we need to get the work done without someone looking over his or her shoulder. We didn't have the capabilities to look over their shoulder.

The COO of Buzzgolf.com further reiterates this point stating that:

> our contracts say our systems will be up whatever % of the time. It's easy to promise those figures, but we must be able to trust the service provider to deliver.

As a result, the Buzzgolf.com adoption of the SoftCo e-business architecture was influenced by reputation and the knowledge that SoftCo would deliver accordingly. Furthermore, the MD of Buzzgolf was an acquaintance of the SoftCo MD.

The recommended best practice within Diageo is: one preferred supplier or service provider for a particular need or task. However, the Guinness WebStore found that this practice is not applicable to its ASP service. They believe that service providers can be alternated with ease and performance can be closely monitored, to see if they match their expectations. For example, Guinness WebStore moved credit card providers after a year because the level of support promised by the provider never materialised. Therefore, having more than one service provider has proven to be the best practice for the organization. Guinness WebStore has a value chain of providers, which they highly recommend. According to the IS Senior Business Analyst:

> a value chain of activities exists, but you can really short circuit it, if you have a good relationship with your service provider, who would go that bit further and solve 90% of your problems.

The IS Senior Business Analyst of Guinness WebStore also believes that the initial drawback to ASP is trust and building up that trust. When Guinness WebStore tests all new applications in the first three weeks or month of implementation, they are in fact testing their service providers. The IS Senior Business Analyst states:

> problems can arise if there is no trust because everything has not been defined contractually no matter how good and you do not want to get into a contractual dog-fight, because it's just a waste of time.

The IS Business Analyst reiterates these beliefs by adding:

> it all depends on how good the relationship is, and the level of trust that exists.

According to the Chairman of Beacon Travel, forming a good relationship with your service provider is critical, and recommends forming a strategic partnership rather than a supplier/client relationship.

> poor reliance of your service providers is an adoption issue. Relying on them to stay up-to-date with what is happening in your particular industry is critical.

Beacon Travel experienced bad relationships, characterised by a lack of credibility and trust, which was one of the main reasons that they terminated their contract with CGEY.

> CGEY made a song-and-dance about everything and charged heavily.

5.2   Investigate Application Functionality And The Amount Of Customisation Required

None of the application issues were considered critical by all four of the organisations studied. However, the criticality of the application is one of the most critical issues affecting ASP adoption. Also, functionality, scalability and customisation are ranked as critical by some of the organisations. The CTO of Pigsback believes that there are two levels to ASP.

> ASP with a view to providing small companies with a service and capabilities to get them up to a point where they no longer need it; and the other side is where there are so many people they do not need, or want, to run these standard applications.

In 2000 Pigsback started outsourcing its mission critical applications through the ASP Model, however, they realised that to drive there IS/IT strategy they would need to bring their mission critical applications in-house and outsource the non-mission critical applications instead. The CTO comments that:

> we have our core application and that's the critical factor. We use ASP for all our non-mission critical applications such as for SMS messaging. Obviously, we would not have the funds or the capability to build a mobile network and O2 have a system called the O2 broker system. It's an ASP SMS engine and it allows you to set up an SMS marketing campaign. We wouldn't have the technology in place to do this and would have no inclination of ever developing this.

Furthermore, according to the IS Senior Business Analyst of Guinness Webstore, the criticality of the ASP solution and the business requirements need to be addressed simultaneously, stating that:

> you cannot outsource problems, only solutions.

With the adoption of ASP, Guinness WebStore had to take into account the fact that they implemented a customised application from the outset. The IS Senior Business Analyst comments:

> the development of the software was custom. But the development contract did not come under the ASP category. ASP came after the application was developed.

The experiences of Pigsback.com highlight this issue also where the CTO of Pigsback believes that:

> if you buy a piece of technology and try to run your business around it then you are cornered by whatever that technology does, and you can not really expand. The only way to expand is to customise the technology, which is sometimes very difficult because you do not own it, and you have less control.

Guinness WebStore found that it was critical to get to a level of thoroughly examining the solution, otherwise, the problem will still exist and will just be in someone else's computer room. Guinness WebStore found that the criticality of the application was closely related to management-time allocation, and the distribution of other resources, especially since they had multiple ASP type contracts. Therefore, they classify each of their ASP services according to their mission criticality.

According to the CTO of Pigsback.com establishing functionality requirements is the first critical step in the planning process, however, there is always the risk that the organisation will adopt an application which does not satisfy the organisations requirements. According to the CTO:

> the first trick was to find an application that was there, that would provide the functionality we required. Therefore, step one, was to get-together as a group and discuss the functionality that was required.

Receiving the right level of functionality was also difficult for Buzzgolf.com, as identified by the COO:

> built around the core product there was a load of additional applications that they wanted to sell. One was a staff timesheet, which buyers and suppliers could use for staff going on holidays and another was a sales tracker. It became quickly apparent that we were getting this big thing that had lots of different parts to it that really did not fit with what we actually wanted.

Therefore, the only solution was to scrap the parts that provided the unnecessary functionality. The COO pointed out that:

> all the parts around the ASP solution that did not fit the golf industry were scraped - we only adopted the parts that were applicable to the golf industry.

Customisation was critical for both Pigsback.com and Buzzgolf.com because both had very specific business needs with a view of becoming service providers. It is important for organisations to plan the amount of customisation required at the outset. Buzzgolf.com successfully budgeted and planned for the high levels of customisation required to their product and so ran into few unanticipated problems. The MD of Buzzgolf.com describes their attitude to the implementation, stating that:

> we knew that it would take that length of time. It was something that we had budgeted for and planned.

However, when Pigsback wanted to expand its application by adding functionality, it was restricted in doing so by their service provider, due to the fact that, other ASP clients would be affected by the subsequent change. According to the CTO:

> the problem was suddenly we discovered a new requirement and because the system was being run as a service with a number of other clients we could not get the changes made because the other clients would also be

affected. We got into a situation in which we had no option but to refocus the ASP service and by doing that we may as well bring the technology back in-house and start from scratch.

5.3 A Mix Of Operational And Commercial Personnel Negotiating The SLA

Pigsback.com has gained lots of experience negotiating and re-negotiating Service level Agreements (SLA). As a result the CTO recommends that the adopting organisation assemble an SLA negotiating team with a minimum of four people, comprising of preferably two commercial people and two operational people. The role of the operational people is to negotiate and demand a level of service, for the organisation, from an operational perspective. The CTO believes that the SLA is typically IS/IT focused and then business focused, stating that:

> you have to keep the two separate. For example, if you send an IS/IT person to negotiate an SLA, they will get the best SLA the company can get, but the company will pay heavily for it.

Also, the Guinness WebStore team was very knowledgeable when it came to the arrangement of the SLA for its ASP contract. This was due to its previous experience with its delivery provider's contracts. Guinness WebStore agrees with Pigsback in that a team comprising of technical personnel and commercial personnel should be involved in the writing of the SLA. Based on their experiences the IS Senior Business Analyst states that:

> legally we would provide the technical ends of the SLA. This is wrapped into a commercial contract, which is managed by our procurement people. They look after things like intellectual property and payment schedules. It is then converted into a commercial contract.

5.4 Implement An Effective SLA, Including An 'Exit Strategy' And Short Term Contract Renewal Clauses

The SLA is deemed the most critical contract issue for ASP adoption by all four organizations studied. An effective SLA is crucial to provide the adopting organization with security and it is important that the adopting organisation takes SLA considerations into account in a 'pre-planning' phase of ASP adoption, as it could affect the actual service provided. For example, the CTO of Pigsback.com states that:

> in practice SLA's are nothing like what they say on paper, they are much better. At the end of the day an SLA is a document that protects both parties. There is no real difficulty.

Issues highlighted by the organisations regarding the SLA centre around the SLA negotiation team and the disengagement process incorporating an 'exit strategy'. The purpose of the 'exit strategy' is to aid the organisation when moving their data from one service provider to another. It requires the service provider to assist the organisation when terminating a contract. The CTO of Pigsback.com states that:

> the critical thing is to understand what the 'exit' strategy is what we call the disengagement process. What is the disengagement process? It's a tricky issue. You as an ASP client have no access to the application, you're only rights are to the data. So when you leave you have to (1)

> make sure you get all the data out, and (2) have a clause in place that requires them to assist you. As a result, the disengagement process is critical.

Buzzgolf recommends the inclusion of anticipated levels of service, backup and support, and the disengagement process in the SLA. Buzzgolf experienced a termination of an ASP contract but was fortunate in its experiences. The disengagement process took place when Buzzgolf's third-party Web hosting company announced that they were pulling out of Ireland. The MD of Buzzgolf commented that:

> Company Y were very good, they put us into contact with another company in the same business. They were very careful, they offered us facilities in the UK and they gave a few months warning before they switched us off so there was no problem; their technical crew liaised with the technical crew in the new hosting company to make sure that our requirements were met. They were very honourable.

The IS Senior Business Analyst of Guinness Webstore is in agreement with Pigsback regarding the convenience of an 'exit strategy' to aid the disengagement process, stating that:

> having a clause which would facilitate the handover process to another provider is a good idea. It might be difficult to implement but absolutely necessary to have it included.

The chairman of Beacon Travel further states that:

> in the breach of the contract, we must be able to terminate our contract, with ease. An 'exit strategy' would help us in doing this.

Furthermore, Pigsback, Guinness Webstore, and Beacon Travel recommend signing contracts which can be renewed every 12 month, due to the fact that they offer the ASP client certainty in pricing and allows for responses to changing pricing structures, among other things. The CTO of Pigsback proposes that organisations should not tie themselves into long contracts and believes that organisations should

> monitor your service levels on a monthly basis to ensure that every single month that all the service levels that have been agreed have been hit, continuously. If they have not been hit continuously then that is one loophole you can use in the future should you require to do so. It is a very good bargaining mechanism to use when you go to renegotiate your contract in 12 months time.

Pigsback experienced difficulties when they got tied into a 'heavy military contract' founded in the year 2000 financial market. According to the CTO

> we started in 2000. All our contracts were for 2000 pricing, then 2001 came around and that just was not feasible. We could not get out of the contract, we were tied into it so tightly. So the only way we could save the business at that point in time was to start in-house and build everything from scratch.

However, although the majority of Beacon Travel contracts are 12 month in duration, the CEO identifies some disadvantages associated with short term contacts, stating that:

> with longer term contracts choosing your partner requires a lot more time at the outset.

5.5 Obtain A Required Level Of IS/IT Competency And Clarify And Evaluate The Need For Consultants

Issues associated with skills and IS/IT capability are ranked the most critical to the adoption of ASP by all the organizations studied. For example, if no in-house IS/IT capability exists, then issues such as, the cost of consultants, monitoring performance optimisation of the benefits without technical knowledge, and technical management, needs to be addressed. Size, management capability, and efficiency and financial issues were also ranked as critical by some of the organizations. For example, Pigsback.com experienced many drawbacks due to their low level of IS/IT capability and this made them very dependent on their service providers. They subsequently recommend that organizations should retain a level of IS/IT capabilities and management in-house, to assist the adoption of ASP. The CTO states that:

> the whole idea with ASP is to learn about what's good, what's bad, what works for you and what does not; and you buy the bits you need, and then when you are happy, so you have got to the point where you know what exactly you fully need, you just develop it yourself.

Retained IS/IT capability and skills available in-house was also critical for Buzzgolf.com and their adoption of ASP. The problems encountered by Buzzgolf.com were due to the large amounts of customisation that had to be performed on the SoftCo generic solution. The customisation of the application took approximately 12 months to complete, impinged by the poor level of IS/IT expertise in-house in Buzzgolf.com. Therefore, when dealing with efficiency and financial issues in the implementation stage of the planning process, Buzzgolf.com had to consider, whether consultants would be required for the implementation process, which would raise costs. However, the COO believes that

> we were lucky we had the skills necessary to carry out the implementation process internally, in terms of what we wanted to get done. So we did not have to hire in expensive consultants – a critical issue in the adoption process.

Therefore, as identified by Sammon et al., (2003) the role of the consultant in the adoption and implementation of ASP is diminishing. The reasons cited for this are the huge costs associated with consultants and ASP clients generally have the specialised IS/IT staff in-house. However, Beacon Travel had to hire consultants, as they did not have in-house IS/IT expertise and this affected the cost of the adoption, by being more expensive than originally planned. Although Beacon Travel hired CGEY to assist in the implementation, they ran into difficulty and incurred huge expenses. For example, since CGEY were based in Dublin and Beacon Travel's HQ is in Cork, if there were any problems with the solution, the cost and complexity of getting one of their consultants to travel from Dublin to West Cork was a burden and was extremely expensive with daily consultancy rates, airport pickups and subsistence. Beacon Travel's Chairman admits:

> that was something which we had not envisaged happening.

Beacon Travel subsequently cancelled their contract with CGEY and partnered with a local consultancy.

5.6 Understand The ASP Value Chain And Establish Regular Performance Monitoring Guidelines And Milestones

Knowledge of the ASP industry, value chain, and institutional pressures are considered critical by some of the organizations studied (Pigsback.com and Guinness WebStore) and important by Buzzgolf.com. A good knowledge of the ASP industry and the ASP solution is paramount, to ensure the adopting organisation has a reliable value chain of providers and a single point of contact. The CTO of Pigsback.com explains that:

> we have a value chain of providers, including network providers, system integrators, etc., and knowledge of the value chain is important, to be aware of possible weak links. A single point of contact is very useful.

The CTO illustrates the advantage of having a 'single point of contact' is that they hold the 'umbrella of responsibility'. The IS Business Analyst of Guinness WebStore agrees and states that:

> a business as small as the Guinness WebStore must be knowledgeable in every aspect of its operation. Technical knowledge of the capabilities ASP can offer is needed in order to optimise the benefits available.

Furthermore, Beacon Travel believes that performance monitoring is vital to ensure successful adoption and continued exploitation of ASP. The Chairman of Beacon Travel states that:

> we have monthly reviews, tracking problems, what problems are about and the time required to remedy them. We have routine key performance indicators from the service providers regarding our activity and how they responded to it.

In addition, Pigsback.com share similar experiences to Beacon Travel and in terms of performance, they monitor levels of security, uptime, response times due to errors, etc. The CTO states that:

> we have defined levels of problem severity and we would have a regular monthly review with NewWorld IQ in terms of performance, to ensure we are getting the required performance. We measure things like the amount of downtime during the month and any associated reasons for that. Some of it might be planned downtime for maintenance or upgrading, more of it might be accidental downtime because a battery went.

6   Conclusions

The organizational prerequisites documented in this paper provide decision makers, responsible for ASP adoption, with an ability to internally assess the suitability of their organization for such an initiative. Based on an analysis of the cases studied, the organizational prerequisites are organized according to technical and non-technical dimensions that need to be addressed in the adoption of ASP, summarised in Table 3. Furthermore, this learning is captured in the foundation of an organizational prerequisites model, as illustrated in Figure 1.

These organizational prerequisites are generated through an examination of 'critical issues' identified throughout the lifecycle of delivering IS to an organization (e.g. adopting an ASP Application Model). However, in use, organisational prerequisites are

concerned with the 'pre-planning' or 'intelligence' phase of an IS project implementation lifecycle (e.g. planning, implementation, post-implementation). Borrowing from the definition proposed by Finnegan and Sammon (1999), organisational prerequisites are necessary elements which are examinable [internally] by the adopting organisation, prior to the organisation undertaking the initiation of a project. As a result, the rationale for proposing the development of an organizational prerequisites model is based on empowering organizational decision makers, concerned with ASP Model adoption, in an independent thought process.

Table 3: *Organizational Prerequisites*

| Technical Dimensions	
Vendor	5.1 Form a Strategic, Trusting Partnership with Multiple Service Providers
Application	5.2 Investigate Application Functionality and the Amount of Customisation Required
Contract	5.3 A Mix of Operational and Commercial Personnel Negotiating the SLA
	5.4 Implement an Effective SLA, including an 'Exit Strategy' and Short Term Contract Renewal Clauses
Non-Technical Dimensions	
Organizational	5.5 Obtain a Required Level of IS/IT Competency and Clarify and Evaluate the Need for Consultants
Industrial	5.6 Understand the ASP Value Chain and Establish Regular Performance Monitoring Guidelines and Milestones
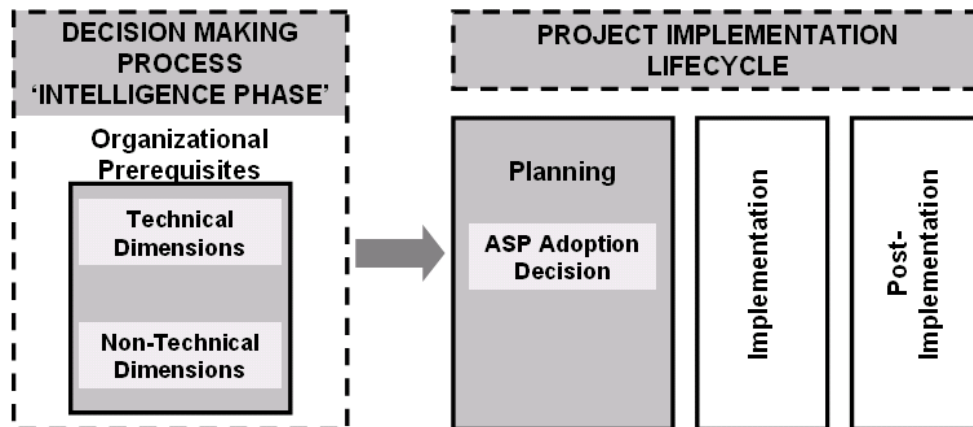
Figure 1: *An Organizational Prerequisites Model For ASP Adoption Decisions*

The research findings demonstrate that ASP is more than the simple service bureaus of the past, from which they have evolved, and a greater depth of understanding is required in analyzing organizations adoption issues. Furthermore, it can also be argued that ASP is more than traditional IS/IT outsourcing and the value-added and business understanding offered by ASP cannot be undermined. However, the study is academic and exploratory and a more extensive study is still required. The purpose of such a study would be to verify and clarify the findings. In addition, a comprehensive method of organizational measurement is required in order to be able to apply the model objectively. This study has

laid the foundation, but further study is required before the model could be applied in practice. Furthermore, research is currently being carried out to identify if the technical and non-technical dimensions affecting ASP adoption are dependent on the strategic alignment perspective and business strategy of an adopting organization.

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