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Adoption Reasons for Enterprise Systems as a Service - A Recap of Provider Perspectives

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Abstract

In 2003 the concept of Application Service Provision (ASP) as a way to provide Enterprise Systems (ES) to Small and Medium sized Enterprises (SMEs), "hyped". In 2013 we saw the same "hype" but now with the Software as a Service (SaaS) model. Even if labelled differently, these concepts seem to mean the same and so, in this paper, we explore if providers perspective for the adoption of external provision of ES as services has changed and, if so, which changes could be seen between the two studies conducted in 2003 (an ASP study) and 2013 (a SaaS study). The main question this paper addresses is: Which changes can be seen from the provider of ES as services point of view as influential reasons to the decision for adopting such services. From the analysis of the two studies, the main conclusion is that providers still emphasize cost as an important factor for adoption, but, there was a change from "having cost control" to "decreasing actual cost".

1. Introduction

In the beginning of 2000 there was a hype on external service provision of software applications, called Application Service Provision (ASP) but very often described as Provider instead of Provision. Several consultancy

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firms and other providers of Information Technologies (IT) found the concept worth to be explored and presented it with significant benefits for user organizations but at the same time experienced some resistance from potential customers. A study done in 2003 [1] investigated reasons for adoption or non-adoption expressed by ASP providers. Ten years later we see the same hype, now with what is labelled as Software as a Service (SaaS). The reader could conclude that this is not the same thing and that is probably a correct observation, however, even if technology as such has changed and even if we have had a development in the possibility of delivering more and more software through Internet the basic idea behind the provision of services is similar. For this reason it would be of interest to investigate if the reasons for adoption or non-adoption as presented by service providers are still the same or if and how they have changed. The specific questions which are explored in this paper are: Have the reasons reported by the provider, for adoption or non-adoption of external service provision, changed in the last ten years, and if so what changes can we see, or if not, why do providers still report the same reasons for a non-adoption?

In order to provide some more knowledge on these questions two studies are reported in this paper. The first one investigated the adoption versus non-adoption of ASP as reported in Johansson [1] and in this the focus is in the providers perspective on reasons for adoption versus non-adoption. The second one investigated reasons for adoption versus non-adoption of SaaS as expressed by a provider of these services [2]. The main aim of the present paper is to highlight the reasons expressed from providers of ASP as well as SaaS and then compare these reasons and discuss similarities versus differences that exist between expressed reasons.

Next in this paper we present some of the conclusions from the ASP study; then we present the SaaS study and its conclusions and finally we compare and discuss the results from the two studies and suggest future research directions.

2. THE ASP STUDY – THE PROVIDER PERSPECTIVE IN 2003

In this section we present and summarize the findings from the study conducted in 2003 among providers of ASP, reported in Johansson [3] as well as Johansson and Carlsson [4, 5].

The use of ASPs was expected to grow significantly, as these were often seen as an accessible way for SMEs to use Information and Communication Technologies (ICTs) to increase their effectiveness and efficiency, but at the same time the providers struggled with the fact that their inflow of new customers was low. Most reports about the ASP concept were predictions about the growth of the market for ASPs. Kern et al. [6] mention that there were over 1,000 companies that claimed to be ASPs during the second quarter of 2001. This can be compared with Lacity and Willcocks [7] who say that only 200 firms fitted the ASP definition by mid-2000 and predicted that the ASP market would rise from US $150 million in 1999 to between US $11.3 billion and US $21 billion by 2003. Firms such as Gartner Group, IDC and Ovum forecasted potential market sizes of up to US $132 billion by 2006 [6].

The ASP concept was commonly considered to stay, but the question often asked was whether customers have a demand for ASPs? In the beginning of 2000 the perception was that there were still few customers and, at the time, Gartner Group [6] predicted that 60 per cent of the providers of ASP would run out of business. So, the major question at this time was which were the reasons reported by the providers for the SMEs adoption versus non-adoption of ASP.

2.1. The Concept of Application Service Provision

The core of the ASP concept is for the providers to offer software applications to external customers [6, 8, 9]. The clients then used the application in their own businesses, where the types of software applications were in areas of Enterprise Systems (ES), such as Enterprise Resource Planning systems (ERP) systems, which are integrated software packages that support business processes in firms, usually comprising different functional modules that reflect the departmental structure of a firm (accounting, procurement, sales, production, warehouse, etc.) [10-12] . Kern et al. [13] describe the difference between an ASP option and other ICT sourcing options (such as insourcing, buy-in and traditional outsourcing), which is the fact that the resource ownership is on the provider side and the ASP option as a one-to-many provider to customer relationship. Kern et al. [14] also select the term netsourcing as the overarching name, because the common element in the ASP option is the delivery of a product or service over a network. The primary product an ASP enterprise delivers is remotely managed business applications.

The ASP concept here is defined as a third-party firm that deploys, manages and remotely hosts software applications through centrally located datacentres on a pay-as-you-use basis. For the client the ASP business model is a strategy to "buy-in" applications and organizing ICT maintenance.

2.2. The Providers of ASP

Each ASP provider is labeled according to Currie & Seltsikas, [9, 15] categorization of ASPs. The authors classify ASPs into three different groups in the light of the product(s) they deliver: Enterprise ASPs (EASP), Vertical ASPs (VASP) and Horizontal ASPs (HASP). The research method is based on semi-structured, open-ended interviews which lasted between one and a half to two and a half hours each, which were tape-recorded and then transcribed, done at the companies with interviewees from sales management and presidency of the ASP department in the organization.

The HASP was a consultancy firm located in Denmark, Norway and Sweden with an offer of flexible solutions to its customers, consisting of a base block and/or a customer-specific solution. According to the interviewee the company was in November 2001 a leading ASP actor in Scandinavia, addressing mainly SMEs and the inflow of new customers was good. The company's data center, in combination with the ISP service and the IT-consultancy experience, made the provider a competitive player in the ASP market. According to Currie and Seltsikas [9] an ASP is categorized as an HASP if it offers collaboration tools and other applications, focusing on business processes, to a broad base of customers. This HASP fits this description in that they do not focus a specific industry and, instead, they try to support their customers with all ICT applications they need, which means that they have a portfolio of around eighty to ninety applications.

So, according to the interviewee, it is possible for the company to offer flexible solutions for their customers with a base block consisted of Microsoft's Outlook, Explorer, Office, Project, and WinZip. And, as an example, customer specified solutions consisting of payroll/billing, e-commerce, and ERP applications. The base block was needed for the service provider to create volume and make a profit. The second part was customer specific applications that a customer either already had or wanted to have. A common SME customer had an e-mail system and a productivity packages (eg. Microsoft Office) as its basic ICT. In addition, a customer often rented a customer relationship (CRM), an accounting, and/or an ERP system.

The main reasons for adopting the ASP concept were described as follows:
- A customer does not need to have extensive ICT-competences in-house and gets 24/7 accessibility to applications, which is not common in SMEs, according to the interviewees;
- Access to a helpdesk function;
- The possibility to get full control over ICT investments and control of the ICT-costs, meaning that a customer knows how much are its ICT costs per user, every month;
- Increase in security – such as help in tackling spam and virus problems as well as internal security issues, for example, backups;
- No problems with upgrades of software.
  On the other hand, two main reasons emerged from the interviews for not adopting the ASP concept:
- Loss of data control because of having data at the provider's data centre;
- Costs, as many presumptive customers say that, based on a calculation from the provider, ICT and associated services will cost too much.

Both these reasons for not adopting the ASP concept were handled by the HASP provider. The fear of losing control reason was addressed by showing how the concept works. The ASP-company uses a specific model showing how the customer is "implemented" in the data centre and the customer can see how security is handled and how the company's system is protected against intruders. The cost reason is addressed by doing a total cost of ownership (TCO) analysis. If the customer lets the ASP-company do this analysis it will get a good picture of its current ICT-costs and this cost can be compared with the ASP-fee.

From the HASP-company, the main reason reported for adopting the ASP concept was cost control. The interviewee described customers' ICT cost control and awareness as very low. The HASP-company uses a total cost of ownership (TCO) analysis to describe to customers its present ICT cost. The figures were then compared with the cost of an ASP solution.

The second organization described was a VASP, classified as such because it offers applications aiming at a specific segment when it comes both to applications and to customers. This VASP was a subsidiary of a larger consultancy firm located in Sweden. According to Currie and Seltsikas [9] is an ASP categorized as a vertical ASP if its offer targets a specific market sector. Their focus is to support the customer in that specific area with ICT applications they need to do business in that area.

The services usually consist of different types of support and management of software applications. These applications are website hosting, payroll/billing, e-mail, e-commerce and ERP systems. The VASP limits its offers to in-house developed systems and systems in which it has enough competencies, meaning that it does not have to depend on an external partner to manage the systems.

According to the VASP-company, there were three main reasons for SMEs to adopt the ASP concept. First, the organization has an overall strategy, implying that it should not handle anything that is not directly connected to its main businesses. Second, the organization's desire to have control over its ICT costs. And finally, the lack of possibilities to handle necessary service and support on its own. The VASP-company says that the main reason for not adopting the ASP concept is the client's fear of losing control over its ICT.

The third enterprise, an EASP, was a global company operating in the ERP market. An enterprise ASP is, according to Currie and Seltsikas [9], an ASP that offers its customers an end-to-end enterprise solution. These companies can be both ERP vendors as well as their partners. The focus of enterprise ASPs is to provide their customers with a company-wide solution. The EASP in this case was an ERP vendor that provided its own ERP system.

The main reason the interviewee stated for adopting the ASP concept was cost control. But there was also the possibility to spread out the investment on a longer time-period. The primary reason for not adopting the ASP concept was based on some thoughts about loss of control, expressed by the interviewee in the following way, "If the servers are not placed in the clients own building the clients will have the feeling that they are losing control".

2.3. Findings of the ASP study

The findings of the empirical study are summarized in Table 1, showing the main reasons reported for adopting the ASP concept and also the main reasons for non-adoption. All providers emphasize cost control as one of the main factors for adopting the ASP concept and this finding concurs with one of the reasons Udo [16] provides and labels as predictable ICT budget.

Table 1.Reported reasons for adoption of the ASP concept.

	ASPs reported reasons for adoption	ASPs reported reasons for non-adoption
The HASP-company	Cost control	Security concerns
The VASP-company	The overall strategy	Fear of losing control
	Cost control	
The EASP-company	Cost control	Fear of losing control
	A way of financing	

One of the service providers also give core competence as one reason, label it as the organizations overall strategy. This can be compared to Gorla et al's [17] statement, saying that there are many articles trying to explain the determinants of outsourcing. These articles focus on the following four explanations. First, outsourcing is chosen because the enterprise wants to focus on its core business. Second, cutting costs is the main reason for outsourcing. Third, a lack of expertise and qualified personnel forces the enterprise on outsource. Fourth, outsourcing is the first step to a business process re-engineering. The first and third explanations are supported by this study. These are also two out of three reasons that Lee [18] expresses. The third explanation on economic benefits,that Lee gives as a reason, is not supported by the findings.

Gorla et al. [17] arrive at the following conclusion: ICT outsourcing is mainly influenced by market structure and ICT outsourcing costs. However, the study does not fully support this conclusion. The main findings instead

demonstrate that costs are not a determining factor in the decision of adopting the ASP concept. The provider instead emphasizes cost control.

When it comes to reasons reported for non-adoption, the providers' statements can be compared to Udo's reported disadvantages. One of the disadvantages reported by Udo is that outsourcing leads to loss of control over ICT. All three providers emphasizes customers' fear of losing control over software applications as a reason for non-adoption of the ASP concept.

So far we have presented the ASP study done in 2003 and the findings of providers suggested factors for adoption versus non-adoption of the ASP concept. The next step will be to present the SaaS study from 2013.

3. THE SaaS STUDY – THE PROVIDER PERSPECTIVE IN 2013

In this section we present and summaries the findings from the study conducted among a top Software as a Service (SaaS) providers in year 2013 and reported in Johansson and Ruivo [2].

SaaS could be said is a "model" of cloud computing and as such seen as a new model for service delivery, which has recently attracted the attention in research and practice. SaaS offers new chances and revenue streams, but also induces new challenges for established software providers. In the SaaS model the application such as for instance an ERP system is provided by a cloud service provider. Some "traditional" ERP vendors have developed new versions that can be deployed in the cloud [19]. The purpose of this SaaS study was to explore provider's perspective on what factors affect adopting applications in the form of ERP as SaaS.

3.1. The Concept of Software as a Service

Traditionally ERP systems had been implemented "on premise" as products bought by customers. The most important disparities between ERP in SaaS and installed in-house ERP applications are, that ERP in SaaS is accessed through Internet, the application and data are under control of the service provider while installed applications are offered as a product and accessed and controlled from the customer's location. Moreover, the payment for the software services is provided through subscriptions that have to be paid as example per user on a monthly basis [20]. ERP in SaaS means, to deliver an ERP system "as a service".

Even if it seems that SaaS is a revolution in the IT-market taking place from one day to another the innovation cannot be described as a revolution of IT. However, it is the result of an evolutionary process, depending on different technological development processes [21, 22]. It can be claimed that the concept of distributing software as a commodity like electricity already originates from John McCarthy in 1960 [23]. In this context, cloud computing can be described as a new way of distributing software applications in an easy and fast manner inducing cost scalability [24].

The innovative part of cloud computing revolution is the consumerization of IT as a service which includes significant changes for consumers as well as for sellers. Distributing a service compared to distributing a product is more complicated because of the immateriality, the integration and the one-shot-principle referring to services [25]. An additional problem for established software vendors is the fact that new software-sellers with innovative structures adapted to the new situations and realized a significant market share (e.g. SalesForce.com). Established software sellers such as Microsoft have to face the problem known as Christensen's "innovator's dilemma" [26]. To compete in this new scenario, the software companies have to change their strategy, especially their delivery and support processes.

3.2. The Provider of SaaS

Recent research indicates that ERP delivered thru SaaS will outperform the traditional IT offers as a consequence of the current economic crisis and will helps the economies to recover [27]. A study conducted by Aberdeen Group [28] amongst 1200 companies across Europe found ERP in SaaS deployments to be less prevalent compared to other SaaS deployments. Although ERP is lagging behind other applications in terms of SaaS based applications there seems to be a general consensus that ERP in SaaS is gaining momentum [29].

To grab this momentum, the four big players in the ERP systems market SAP, Oracle, Sage and Microsoft are positioning their ERP offers in SaaS model. These players have different sales models and channels. Microsoft, for example, uses an indirect sales channel and has built up an ecosystem of implementation partners for their Dynamics suite. Accordingly with Antero and Riis [30] study, the indirect sales channel limits the possibilities for software as a services for ERP system vendors, because they would cannibalize their own distribution partners if they offer cloud services directly to customers.

Supported on the existing literature in the field of SaaS, which is still at the beginning, the research method chosen was semi-structured expert interviews. These interviews were conducted with 20 experts (consultants, architects, engineers, program managers, technical sales) in ERP and SaaS domain within Microsoft. An inductive approach was used and the data analysis method selected was the "content matrix analysis" [31]. The face-to-face interviews were conducted in January and February 2013. The interview-guide had several questions created from the literature and secondary informational sources such as Gartner [19, 29, 32, 33] and IDC [27, 34].

3.3. Findings of the SaaS study

The three factors shown in Table 2 are the value propositions which Microsoft states to offer to bring value to the customer for adopting ERP systems in a SaaS delivery model and to gain market share in comparison to on-premise solutions.

Table 2. Reported reasons for adopting or not ERP in SaaS concept

Microsoft	Costs
	Security
	Availability

We retain the top three reasons from a total of 10 identified in the study [2] because were perceived as the most important factors by all 20 experts interviewed. They were unanimous in claiming that these three are the reasons that can be seen as both influencing the adoption versus the non-adoption of applications as services. Regarding costs the following statements from the interviews support the motion of changes in costs and costs structure as reasons for adoption. In the interviews the experts talked about lower total cost of ownership (TCO) when comparing SaaS ERP with on-premise ERPs. Example of statements supporting this are: "the most appealing SaaS feature is the lower TOC", but also as stated by one interviewed: "as soon as customers realize the costs figures they become more receptive to continuing the conversation" which sort of indicate that potential SaaS ERP customers are interested in decreasing costs by SaaS. From this it can be claimed that the level of costs for the software applications is a dominant factor in the decision, and it can be assumed that lower costs makes the organizations decision-makers to decide on adoption of SaaS.

Reducing costs were seen by all participants as a benefit influencing adoption of SaaS ERP, while at the same time security and confidentiality and protection of customer data were raised as a concern by all 20 participants [35]. In regards to security, four experts mentioned that customers usually ask questions about confidentiality about critical information, asking questions such as: "How are you going to ensure confidentiality of information?", "What happens if the vendor goes out of business?". There were also statements expressing concerns about local laws in countries where they operate which prevent certain kinds of information to be kept off-shore [36], such as: "how do you secure the jurisdictional boundaries location(s) in which the breach might occur", "How are you just going to leave that in the cloud somewhere?".

All experts perceived that customer's understanding of systems availability affect the adoption of ERP in SaaS. SaaS requires a predictable, stable and reliable internet connection to access web-based service. As one interviewee stated: "regardless customer claims, the system capacity of our datacenters ensure high system availability and data availability". Other participants have noted that customers concerns about future developments of the ERP SaaS system: "you lose the ownership and lose the control that you have over the system and you are forced into the direction by the system as when you actually hosting it yourself" [27].

4. CONCLUDING DISCUSSION AND FUTURE DIRECTIONS

Providers of ASP reports control as an important factor for making the decision when deciding on adopting ASP or not. The factor control plays a dual role in the adoption decision. Control is described as a positive factor for adoption when control is about controlling cost. Control is then also described as a negative factor, by negative in this context is meant that the SMEs hesitate to adopt ASP from the fear of losing control over data. The main factor that providers of ASP suggest as positive for adoption of ASP is that the customer gets and would like to have control over costs. When exploring the ASP concept as such this factor seems to be a fair factor to present.

The primary reasons the ASPs give are: first, customers choose to adopt the ASP concept because they know what costs they have to pay for ICT each month. Second, the customers adopt the ASP concept because they cannot provide themselves with the same ICT for the same cost.

The primary reason the ASPs give for non-adoption is concerns of losing control. This concern is expressed in two ways: first, the fear of losing control over ICT assets, and second, the fear of losing control over the data.

When analyzing the findings in the SaaS study, it is found that cost is an important factor for adoption. However, the provider does not talked about SaaS as a way of controlling costs, instead it is described as a way of decreasing costs. This is a difference between the two studies and one conclusion that can be drawn from this is that the external way of delivering applications as services has maybe matured. It can also be suggested that the "benefit" of having control over costs is not that prevalent any longer and that therefore the factors that now are in focus is a decrease of costs. So, the main conclusion drawn from the comparison of the two studies is that providers still emphasizes cost as an important factor for adoption, but, it has changed from being a question of having cost control to be a question of decreasing actual cost.

These findings have not been confirmed in the end-consumer context. Therefore a future direction would be to develop an empirical-quantitative research approach to validate the above reasons from the customer's perspective. Moreover given the emerging paradigm delivering applications as a service we welcome researchers to investigate other forms of IT value like cost efficiencies, customer-centric and partner-centric capabilities [37].

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