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# Exploring ASP as sourcing strategy: theoretical perspectives, propositions for practice

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## Abstract

Application service providers (ASPs) offer multiple users a subscription-based access model via the Internet to centrally managed applications. The appeals of ASPs are the per-user-pricing models, one-to-many access possibilities to applications, IT expertise and capabilities, and value added management services. This paper argues that although the ASP model offers an electronic outsourcing solution, there are in fact many similarities with more traditional IT outsourcing. Using four case studies from exploratory research into ASPs, we illustrate the applicability of a little used contingency model from the research literature that combines resource dependency theory, resource-based theory, transaction cost theory and agency theory. From this, we develop six major propositions that customers should bear in mind when considering an ASP option. Similar to outsourcing services, ASP sourcing offers some interesting benefits, but equally entails a set of risks that practitioners should carefully evaluate when considering the ‘netsourced’ ASP option. © 2002 Published by Elsevier Science B.V.

**Keywords:** Outsourcing; Application service provision; Interdisciplinary contingency theory; Case research approach

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## **1. Introduction**

Application service providers (ASP) have been characterised as among the first players in a third wave of information technology (IT) outsourcing, called 'netsourcing' (Kern et al., 2002). This follows facilities management of the 1980s (Loh and Venkatraman, 1992) and strategic outsourcing of the 1990s (Willcocks and Lacity, 1998). ASPs are service firms that provide on a contractual basis, rental based or 'pay-as-you-use' access to centrally managed applications made available to multiple users from a shared data centre over the Internet or other networks.

Why such moves to the net as a delivery mechanism for IT outsourcing? On the one hand, technology developments such as the rapid maturing of the Internet as a reliable and secure network, the acceptance of browsers as the new application interface, the increasing adoption of server-based computing (i.e. network computers and thin-client server systems) form one set of drivers behind this shift. Another driver is the demand for complex electronic commerce, supply chain management and customer relationship management applications. Changing market forces, on the other hand, sometimes creates a shortage of fundamental IT/application skills, and increasing demand for value added IT services (1999–2000), then from 2001, led to a push to minimize overhead costs and revived focus on organisational core competencies, forcing companies to rethink their sourcing strategies.

The underlying idea of ASPs has been around for some time in the form of time sharing, bureau and application outsourcing services. The main difference is that the ASP model provides network-based access to a user and demand driven pricing model, to an integrated portfolio of complex applications that spans the complete virtual value chain of an enterprise, and to resources and expertise that enterprises otherwise do not have in-house. The original interest in ASPs from 1999 was driven by a focus on core competencies, the attractive cost model for customers, and the large shortage of necessary IT/application skills (Kern et al., 2002).

Thus ASPs particularly targeted smaller and medium sized firms by providing applications that these firms could normally not afford. Additional benefits claimed by ASPs have been painless frequent application upgrades, lower total cost of IT ownership and value added business services (Kern et al., 2001). The resulting arguments for the ASP model seem extremely persuasive, but experience with IT outsourcing has shown that expectations are often not achieved, especially when the bandwagon starts slowing down (Lacity and Hirschheim, 1993a,b), something that occurred with ASPs from late 2000.

With more than 800 firms fitting the ASP definition in 2001, and with predicted revenues being anything from \$5 billion to a much less likely \$22 billion in 2005 (Gartner Group, 2000; Forrester Research, 1997); this model has defined for many interested parties an attractive new sourcing option, though the business models and customer interest, typically, were not strong from late 2000 (Kern et al., 2001). By late 2001, the ASP market consisted of a diverse range of established and new start-up service firms, including Internet service providers (ISPs), telecommunication and network infrastructure providers (Telcos), independent software vendors (ISVs), online software companies, system integrators and outsourcing service vendors. Together they have been offering access to an immense array of applications. By late 2001 it was widely expected that the market would

see a shakeout and consolidation of players down to something like 300, and in its maturing phase an aggregation shift as large outsourcing providers, such as IBM, EDS and CSC determined their netsourcing strategies. These firms would be the ones most able to offer the long investment time, resource capabilities, expertise, technology and geographical presence to make ASP-type business models attractive to global Fortune 1000 businesses.

The objective of this paper is to investigate what ASPs have to offer and how benefits and risks associated with the ASP model demand consideration from companies evaluating the ASP option. In particular, the research focuses on what potential customers need to take into account if their goal is to outsource with an ASP. There is little research available on ASPs upon which can be drawn, especially in terms of decision and selection criteria. More importantly, our research revealed the lack of a theoretical underpinning that could be used to analyse the ASP sourcing option. To address this shortcoming, we undertook an exploratory research study into a number of ASP service offerings and their client scenarios.

We also contribute a theoretical outsourcing framework adapted from Cheon et al. (1995) to help to organize and interpret data and define avenues for further research into ASPs. The combination of resource-based theory (RBT), resource dependency theory (RDT), transaction cost theory (TCT) and agency cost theory (ACT) in the theoretical framework allowed for the development of a number of key propositions that can guide future research. The conceptual framework is particularly useful for this purpose because it covers those strategic, business and financial factors most often identified as the primary motivators for outsourcing (see Lacity and Willcocks, 1998; McLellan et al., 1995). For practitioners, this paper will be of particular interest as it explores the ASP model in terms of products and services offered. In addition, a set of business, strategic, and economic considerations are identified that can help guide interested companies in their evaluation and decision making process about whether or not to opt for an ASP.

The remainder of the paper is structured as follows. The Section 2 provides an exploration of the ASP option in terms of potential benefits and risks, before outlining the research approach to investigating ASP solution in four specific case settings. Following the case studies we briefly introduce the conceptual framework that was employed to interpret, discuss, and develop a set of propositions. This set forms the basis of the last part of the paper, which contains the conclusions, management implications and suggestions for further research.

## **2. Exploring the ASP option**

Core to the ASP concept is that a provider can offer a set of applications in a one-to-many hub-like arrangement from its centrally managed server farms via the Internet or virtual private network (IDC, 1999; Kern et al., 2002). The business and economic logic of this option is one of being able to host and offer these applications as a service package to many clients, in an endlessly scaleable model. The resulting argument for the ASP option are in turn very similar to that of IT outsourcing—one of achieving, offering and delivering economies of scale that a customer company could not realize internally.

The economy of scale benefits touted generally arise in areas of applications and their licenses, network costs, technology, and integration and implementation expertise (Walton et al., 2000).

As such the ASP concept is relatively simple in its set-up. It entails primarily hosting and provision of applications. The actual servers on which these applications reside, and the network connection that enables the delivery of the application over a network is often sourced from a third-party (Green and Henderson, 2000). As with outsourcing, ASPs define their product services with customer-specific service level agreements (SLAs). SLAs define the basis of the client–ASP relationship and function as a guarantee for the availability and performance levels of the application services. The following outlines some of the key services that need to be covered in the SLAs (see Kern and Willcocks, 2000; Walton et al., 2000):

1. The availability of the application. This needs to include the network and server operations, data security, backup operations, application monitoring and technical support.
2. The performance of the products and including the network performance, server performance and application performance levels.
3. The fit between the business needs and the application, which has to include application planning, application configuration, application upgrades, application customisation, and application integration (e.g. with legacy systems).
4. The application support levels. This can include user training and education, and application support for end-users or administrators.

An exploration of the product and service offerings of a large cross section of ASPs as at 2001 indicated that a wide range of business applications can be accessed through an ASP model (based on IDC (1999) and our market review of ASP offerings in Kern et al. (2001)). The primary element of the product offerings is formed around the application portfolio and its management. Applications in general are said to support or enable certain business processes in organisations. When these applications are then grouped (Cole, 1999) according to business processes, certain types can be identified as being available from ASPs (Table 1).

As Table 1 illustrates, the applications offered cover all traditional packages, that can be offered as templates. A packaged application contains business logic that supports specific business processes and is customised to meet specific customer needs, but does not exceed a 20% customisation of business logic. This is distinct from the bespoke developed applications that are custom built and company specific (Cole, 1999; Kern et al., 2002).

### *2.1. Potential benefits and risks of the ASP option*

The original rapid growth of the ASP market suggests that companies could perceive ASPs as offering substantial benefits. However, the claims and benefits touted often cannot be substantiated due to the lack of long-term customer experiences, and hence case studies. Nevertheless, based on our extensive market study (Kern et al., 2001), this section

Table 1

Range of applications on offer from ASPs (source—classification of application and examples based on Cole (1999), identification of ASP offering based on an extensive set of Internet articles and ASP websites)

Business process and application type	Examples
Finance and accounting	Great Plains, J.D. Edwards, Oracle, Peoplesoft, SAP
Human resource management	J.D. Edwards, Lawson, Oracle, Peoplesoft, SAP
Customer relationship management and sales force support	Clarify, Onyx, Oracle, Peoplesoft, SAP, Siebel, Vantive
Manufacturing and logistics	Aspen technologies, EXE
Supply chain management	Baan, Peoplesoft, SynQuest, Flextronics
Product development	Aspect development, Parametric Technologies
E-commerce	Ariba, BroadVision, CommerceOne, Open Market
Industry specific (vertical application suites)	Cerner, McKesson HBOC
Desktop productivity	MS Office
Messaging and collaboration services	MS Exchange, Lotus Notes

provides an overview of some of the most common ASP benefits and risks perceived and experienced (Table 2).

Interestingly, the main business benefits revolve around two main aspects: ASPs reduce the need to retain in-house skilled IT professionals and ASPs provide access to the latest applications of any complexity. In contrast, similar to outsourcing, business risks relate to the concern for loss of control over applications and their management, and the yet unproven ASP business concept in general. Secondly, the technical benefits touted by ASPs are probably the most compelling. It is often claimed that application problems or limitations associated with the use of applications to support business operations can be overcome by working with an ASP (Walton et al., 2000). However, there still remain a number of technical limitations. These include network bandwidth, and issues of security, scalability and reliability. (ITAA, 2000; Kern et al., 2001). Finally, ASPs offer a number of economic advantages. The pricing model of ASPs enables predictable and controllable usage and application costs (IDC, 1999). On the other hand, it is unclear what pricing looks like when technology or business needs change during a deal, as they often have done (Kern et al., 2002).

From our review of the ASP market, it becomes clear that as in the case of IT outsourcing generally, the ASP solution might not be the right choice (1) for all business needs and companies and (2) under all circumstances (Kern and Willcocks, 2001). Secondly, there is no certainty that using an ASP solution will automatically generate the advantages and/or disadvantages. Lastly, the specific benefits and risk we found are also very much dependent on the actual ASP offering and its specific IS capabilities. These issues are particularly pertinent during the 1999–2002 embryonic phase of ASP market development (Kern et al., 2002).

To put the above benefits and risks into perspective, a survey of 250 IT managers by InformationWeek (Mateyaschuk, 1999) and their stance towards working with an ASP, revealed that 30% were already renting or leasing applications from a third-party and an additional 14% planned to do so in the near future. Larger companies sought an ASP that understood their business and the impact of the applications, while smaller companies

Table 2

Potential benefits and risks of using an ASP (source, ITAA (2000) review of an extensive set of Internet articles and customer case descriptions)

Type	Benefits	Potential risk
Business	Reduces the need to attract and retain skilled IT professionals	Loss of control and high level of dependence on ASP
	Enables company to concentrate on strategic use of IT	Inability of ASP to deliver quality of service: lack of skills and experience
	Enables small and medium sized companies to use tier-1 applications (e.g. ERP, SCM and CRM)	
	Application scalability enables rapid growth of companies	
Technical	Fast and easy application deployment	Level of customisation and legacy application integration offered by ASP is insufficient
	Higher degree of application standardisation	Reliability and speed of delivery due to bandwidth limitations
	Access to wide range of applications	Low capability of ASP to deal with security and confidentiality issues
	Application maintenance simplified and performed by ASP	
	Simplified user-support and training	
Economic	Low total cost of ownership	Pricing changes by ASP unpredictable for application updates and services
	Low up-front investments in hardware and software	
	Improved cost control as result of predictable subscription costs	

found the low up-front investment and the range of services offered were particularly attractive. The main benefits pursued by all were guaranteed performance levels, fast implementation times, scalability, predictable costs, service expertise and guaranteed application uptime. On the other hand, the main concerns raised were the uncertainty whether the claimed cost advantages could actually be realised. For 19% this defined the main reason not to choose an ASP, while the lack of customised applications and the uncertainty about an ASP's development and the market in general defined the other two chief reasons. By mid-2001 in a survey of some 400 companies we found 27% in a current ASP deal, with 50.2% actively evaluating the ASP option in the next 6 months. Respondents registered similar concerns as listed above, but a striking finding was how uninformed many potential customers were about the nature of ASPs and their offerings, and how their ASP risk evaluations were consistently higher than those recorded by actual customers (Kern et al., 2001).

The above materials provide some indications of the overarching rationale behind the decisions whether or not to use an ASP. It remains a question, however, whether the reasons provided are applicable in all situations. It also does not describe under what conditions the benefits can be realised. The size of companies, capability and offering of the ASP, and the type of application sourced all seemed to influence the fitness of

Table 3  
Application service provider case studies

ASP	Base	Applications	Client scenarios
EC-Gate	Netherlands, Canada	Oracle application suite	EC-Bouw
Netstore	United Kingdom	Microsoft Exchange, System management	Opus
USInternetworking	United States	ERP, CRM, E-commerce, horizontal and vertical applications	US West
Corio	United States	ERP, CRM, E-commerce, horizontal and vertical applications	Excite

outsourcing applications to an ASP. Taking these notions into consideration we looked towards a number of specific ASPs and their offerings to better understand what customers should consider when evaluating the ASP business solution.

### 3. Research approach

The research for this paper is best described as explorative–descriptive in nature due to the embryonic nature of the ASP market (Engeldorp Gastelaars and de Leede, 1996). This research, in turn, will neither test nor validate a general theory, but aims to develop an understanding of the issues that are relevant for evaluating the ASP option. Accordingly, we opted for a case-based approach, which in this context has been shown particularly appropriate for exploratory research of this nature (Newman and Sabherwal, 1996; Pettigrew, 1990; Walsham, 1993). This approach allowed us to investigate ‘sticky, practice-based problems (such as using the ASP option) where the experiences of actors are important and the context of action is critical’, as Benbasat et al. (1987), p. 13 suggest.

Cases were selected on three criteria. Firstly, the exploration of the ASP market indicates a large diversity of ASP offerings and ASP players. In turn, to get a good overview of the ASP option a range of cases were chosen that covered a number of application services. We found this approach also very conducive for identifying the differences in the ASPs business models. Secondly, ASPs were selected according to their different international origins, i.e. US and Europe. Thirdly, ASPs were selected that differed in their application and service portfolio—commodity, enterprise and collaborative applications. Finally, the backgrounds of the ASPs were considered. The research includes companies who have a background in telecom, system integration, and software development. Also ASP start-ups (also referred to as ‘pure play’ firms—Gartner Group, 2000), were studied.

Table 3 below outlines the case companies and the type and combination of applications provided by the ASPs investigated.

The data collection was undertaken between January 2000 and May 2000, with a follow-up in late 2001, through interviews and reviews of various secondary documentation. The documentation included numerous press releases, internal documents such as memos, company reports, presentations, sales and marketing brochures and a detailed review of the companies various web-sites. In addition, secondary literature was collected and used including numerous current and backdated newspaper articles (accessed through

various CD-ROM databases), research studies from professional market research companies such as IDC, Gartner, Forrester, ASPstreet, ASPnews, ASP Industry Consortium, Durlacher, and various trade press articles. We were also able to attend the first European ASP summit in March 2000 in London, UK.

Two pilot interviews were held with companies that planned to enter the ASP market. Attendance of an IT-fair (CEBIT, Hannover, Germany) allowed us to set-up meetings with Baan and SAP to discuss the ASP market, their (future) offerings and client cases. These two try-out interviews led to a number of research avenues and ideas to structure the interviews and the protocol. The researchers then conducted 15 interviews at various locations in Europe (i.e. UK, The Netherlands, Belgium and Germany) including company headquarters, hotels and conferences. The interviewees with IT managers, CTOs, managing directors, CEOs, senior outsourcing directors, sales and marketing managers, strategic business development manager, CIO, and consultants were between 90 and 180 min in length. All interviews were conducted using open-ended questions informed in many ways by our understanding of IT outsourcing and our knowledge of the ASP market. The semi-structured interview protocol<sup>3</sup> was designed to elicit data about ASP practice, offerings, customers, benefits and disadvantages, selection and evaluation practices.

Data analysis went through numerous iterations to formulate a coherent and consistent overview of the ASP firms. With each iteration cycle—following the hermeneutic circle principle to case study development (Klein and Myers, 1999)—the cases took shape. The initial drafts of the cases were of course very descriptive in nature, but it provided a mechanism for sorting and categorising the extensive data and further enabled us to move towards a more in-depth analysis through subsequent iterations.

While we pursued the research in this way, our objective below is limited to outlining the case histories so as to provide insight into how ASPs are developing and the types of services offered and customers attracted. From this platform of understanding we then use the case study material to show the value of, and give illustrative empirical support for, the theoretical framework and propositions we then develop.

## 4. Case studies

### 4.1. EC-Gate

EC-Gate has been active as an ASP, since 1997 with dual headquarters in Canada and The Netherlands. It focuses on facilitating co-operation between supply chain players by offering b2b e-commerce platform solutions. Its industrial target, in turn, is primarily vertical markets for which it has developed unique expertise and knowledge especially in terms of supply chains and their management. EC-Gate to date has developed specific solutions for construction, trading, transport and distribution companies, and for financial institutions. All industries and companies that are likely to benefit from a portal-facilitated market solution are thus considered to be their primary target market.

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<sup>3</sup> A copy of the actual interview protocol can be obtained from the authors upon request.



#### *4.1.1. Applications and services*

Oracle products define the basis of EC-Gate's application solution, covering ERP, e-commerce, back office automation and other functions and processes. EC-Gate does not, however, provide template driven or standardised application services. It offers instead customised solutions built on Oracle's application suite. Clients are thus not bound or limited by the functionality of 'off-the-shelf' applications. This is crucial, as EC-Gate's CEO argued, that the functionality must be easily expandable to meet clients changing business needs.

EC-Gate's method of developing b2b e-commerce solutions is based on the principle of separating the various technical layers, i.e. communication, presentation and data layer and by keeping the core standard application engine. In so doing, they can simplify and ensure efficient maintainability and manageability of application services. Due to the resulting complete customisation of the presentation layer, the client gets in essence a tailor-made solution. Scalability on the other hand, of this solution is achieved through the use of standard web browsers interfaces at the client side and the use of otherwise scalable Oracle products.

#### *4.1.2. Partnership model*

For market knowledge, EC-Gate has partnered with Cap Gemini, Ernst and Young, PricewaterhouseCoopers and KPMG amongst others. In addition, it has a number of close ties with specialised Internet companies that assist in developing the functionality around the core application engine of the technical solutions. On the other hand, its main application and technology partners include Oracle, Compaq and Sun. They provide the components that form the base of the technical and application platform. EC-Gate itself takes care of the hosting and operates for this a large data-centre in Canada that is linked to its customers via a virtual private network. Its connectivity, however, is sourced from a number of telecom operators. For its recent WAP service offering EC-Gate has entered into a partnership with Ericsson.

#### *4.1.3. Client scenario*

One of the two most highly profiled client scenarios of EC-Gate is EC-Bouw, a portal developed specifically for the construction industry in Europe. EC-Bouw is a vertical portal that offers online information, a trade platform and specific applications that can assist managers in co-ordinating and planning their projects. Together this platform enables EC-Gate's customers to interact with the various players in the construction supply chain and facilitates product trading. It caters specifically for contractors, merchants and manufacturers. The second client scenario is the Canadian Bank, to whom EC-Gate provides customer relationship management services and e-commerce solutions. This is another type of solution based on the customised Oracle suite of applications.

#### *4.2. Netstore*

Netstore was founded in 1996 in the United Kingdom by two managers who saw a growing need and market as the Internet took off for disaster recovery and online backup

services. Building on their previous experience in this area, Netstore was set-up to provide similar services through an ASP business model. According to the founders, sourcing these services from an ASP allowed companies to then focus on their core business, be assured of their IT services and make their overall IT costs more predictable.

#### *4.2.1. Applications and services*

The products provided by Netstore can be divided into systems management applications and collaborative applications. The systems management applications include amongst others an online backup and recovery service, and a secure PC-refresh services, which fully installs and configures software and data on new laptops. These systems management services are especially targeted at the distributed enterprises that operate a large mobile workforces. More recently Netstore expanded its portfolio into collaborative applications through a partnership with Microsoft. This allowed Netstore to be one of the first to provide Microsoft Exchange's functionality over the Internet, which includes messaging, scheduling and task management.

#### *4.2.2. Partnerships*

Netstore operates its own data centres in Bracknell, UK, making it completely independent of any data centre or co-location service providers. They find this fundamental to ensure control, accountability and security for their services. The system management applications are based on Connected Corporation's service package, which allows Netstore to focus on delivering those applications services where it has the greatest economies of scale while sourcing-in the rest. For the collaborative applications, a partnership was established with Microsoft in December 1999. For all of its products and services Netstore uses a pricing model that is based on a flat-fee-per-seat, per-product, per-month.

#### *4.2.3. Client scenario*

A particular insightful customer scenario of Netstore's services is Opus Group, a marketing service group for IT and telecom businesses. To maintain close relations with its clients Opus depends on extensive electronic messaging services. Opus operated its messaging system for years, but continued to experience problems that resulted in non-availability of its email system and consequential service disruptions. Even when the email system was available, Opus was not satisfied with its performance. While Opus was still looking for solutions, Netstore proposed through an ASP model to host an application solution based on Microsoft Exchange that would instantly resolve most of their service performance and quality problems. Opus was keen to use this service and agreed to pay a flat fee per-seat per-month for an agreed contract period of 2 years with Netstore.

### *4.3. USinternetworking*

USinternetworking (USi) was founded in 1998 in the United States and is often quoted as the largest ASP in terms of customers and potential business (Green and Henderson, 2000). For its services USi constructed its own global network with data centres in the US, Europe and Asia. The connection between the various data centres and the Internet is

handled by major Internet backbone providers, such as UUNET. USi offers packaged applications that are hosted in its data centres and can be accessed over the Internet through a proprietary interface called iMAP. These applications are also supported by its global services platform (GSP), which allows USi to offer it locally and globally to customers. With its iMAP and GSP portfolio, USi targets primarily mid-sized enterprises and a selection of business divisions of multinational organizations.

#### *4.3.1. Applications and services*

The range of applications offered by USi include ERP applications (Peoplesoft, Lawson that both cover Financials, HRM and Purchasing), CRM (Siebel), e-commerce (Ariba, Broadvision, MS Site Server), messaging and collaboration (MS Exchange), databases and datawarehousing (Oracle, Microsoft, Sagent) and professional services automation (Niku). USi takes the packaged application and then develops templates of these along the lines of their core application functionality and then targets these templates at specific customer requirements. Based on these templates USi configures additional functionality as customers need it. Together with its telecoms and service partners, USi then takes full responsibility for the availability and performance of all its applications services. USi's advantage here over others is its control over both connectivity and data centre operations.

#### *4.3.2. Partnerships*

USi has an extensive list of partners, with and through whom it offers its iMAP and GSP services. However, to handle its core business, such as implementation and integration, USi had decided early on to build up its own competencies. In turn, it has acquired a number of smaller system integrators, but also partners with a number of larger consulting firms who assist in large million dollar deals. USi has established a number of strategic partnership with leading technology firms, such as Cisco for its network components and with HP, Compaq and Sun to obtain all the necessary hardware for its data centres.

#### *4.3.3. Client scenario*

One of USi's largest clients is US West telecommunications, whom it provides with a Siebel-based customer relationship management application service. US West provides integrated, one-stop communications solutions to 25 million-plus customers nationally and in 14 western and mid-western states. It operates large application environments, giving thousands of users access to its services at a single point-in-time. In order to support its sales force US West is using USi's application portfolio as the underpinning technology infrastructure. The CRM applications its sources from USi fit directly into US West's strategy of enabling its sales force to better service customers. USi in respect to US West is thus some times quoted as having facilitated their new customer-focused strategy by being able to rapidly implement a CRM solution.

#### *4.4. Corio*

Corio started its business in November 1998 as the IT service provider for Excite, the Internet portal. From the beginning, Corio had decided to source all of its data centre, technology and network facility requirements from Exodus directly, while focusing on

developing integration competencies and skills, IT capabilities and value-added services to deliver the ‘best-of-breed’ application solutions to customers. The backdrop to Corio’s business model was clearly based and informed by Jonathan Lee’s (the founder) experiences with IT outsourcing. His previous start-up company, DSCI, had offered organisations a complete IT team for hire to deal with the lack of internal IT capabilities.

#### *4.4.1. Application and services*

The application service Corio offers is referred to as the intelligent enterprise. Corio describes this service as a securely hosted suite of applications spanning all business processes, by integrating best-of-breed applications that are customised to specific industries and customer needs. The resulting suite of applications covers the following business processes: ERP (Peoplesoft) including e-procurement, financial management, HRM, manufacturing (also Flextronics) and supply chain management (Flextronics), business intelligence (Cognos), e-commerce (Broadvision, CommerceOne), and CRM (Siebel). To be able to offer such services, Corio had developed a technical integration model called Orion<sup>®</sup>, which simplifies by use of templates the integration and customisation task of the various applications. With the integrated application platform Corio can offer a set of integrated functionality to multiple customers through a single interface point, that caters for customers unique requirement. This implied that if a customer wanted only an e-commerce solution to begin with, but then at a later point needed a HRM solution, Corio could easily slot-in the extra functionality as needed in its Orion framework. Besides the implementation and integration services, Corio also handles all the management, administration and support related to the applications and the underlying technology it offers as its ASP solution. However, it sources all its technology from a group of strategic partners.

#### *4.4.2. Partnerships*

For its data centre operations, Corio relies on partners such as Exodus and Concentric. The hardware is sourced from Sun and DELL, while network equipment comes directly from Cisco. The Internet connectivity is provided by the backbone provider MCI Worldcom. For the application services Corio offers, it has established a number of strategic partnerships with a range of well respected suppliers that can cater for most organisational processes, including Peoplesoft, SAP, Siebel, Cognos, CommerceOne, Broadvision, Flextronics and others. To enhance its application and legacy system integration capabilities, Corio has further established partnerships with system integrators such as Cambridge Technology Partners, Beacon Application Services, Datastudy Inc., e-Force and Emerald solutions.

#### *4.4.3. Client scenario*

The first major client of Corio was Excite, an Internet portal that merged with @Home networks. From the beginning Excite planned to operate a complex ERP package to handle its finance. After selecting Peoplesoft financials, Excite@Home also started to make use of the complete Peoplesoft ERP package and Siebel’s CRM applications. Throughout its growth Corio has provided Excite@Home with the necessary application services to facilitate scalability of services and ensure rapid growth. Corio’s experience of managing

and integrating large sets of applications was of particular benefit for Excite@Home as it grew in market share and overall company size. By sourcing its IT externally from Corio, it saved considerable application and technical costs, but also minimised its invests in additional technical and human resources. Corio, in turn, stands as a prime example of an ASP that can cater over time for all application needs, even though it really only combines the technology and applications from others into an application service solution that spans the whole enterprise. Yet this flexibility allows Corio to offer a application solution for all existing and potential requirements.

## 5. An analytical framework for studying ASPs

Organizations considering an outsourcing option need to perform a thorough evaluation process to come to a weighed decision and sourcing strategy (Willcocks et al., 2000). To date, IT outsourcing has been evaluated through several theories (see Appendix A), the most prominent being TCT. Researchers have argued that the underlying financial reasoning inherent in TCT is insufficient for analysing outsourcing decisions (Kern and Willcocks, 2001). In fact, recent outsourcing research revealed that TCT leaves many aspects unexplained and even contradicts effective outsourcing practice (Lacity and Willcocks, 1995; Kern, 1999). In turn, a broader perspective integrating multiple approaches need to be adopted that explains, as McLellan et al. (1995) point out, why companies form IT outsourcing alliances for financial and strategic reasons. Clark et al. (1995), p. 222 equally emphasise that the use of TCT and power and politics can provide a much richer understanding: ‘...each contributing significantly to a more informed understanding of the trend toward the outsourcing of IT services.’ For the same reasons, this paper adopts the contingency framework by Cheon et al. (1995), which we found to offer a solid base for investigating the ASP phenomenon. This model and the underlying theories are briefly described below.

### 5.1. Towards a theoretically-based contingency model of IT outsourcing

Cheon et al. (1995) use four distinct theories from two different disciplines (strategic management and economic theory) which they combine into a contingency model and argue should guide empirical research into IT outsourcing. The four theories that they aggregate are RBT, RDT, TCT, and ACT.

#### 5.1.1. Information technology as a resource

Two theories in the contingency model describe the implications of generating resources internally or obtaining resources externally. IT can be seen as one such resource. The RBT describes how organisation can gain a competitive advantage by differentiating themselves in their collection of resources (resource heterogeneity) and inability of other firms to obtain comparable resources (resource immobility). By undertaking outsourcing firms can maintain their distinctiveness of products, or their low cost position, through co-operating with their IT outsourcing partner.

Stevenson (1976) already noted early on that external acquisition of resources can fill

resource and capabilities gaps.<sup>4</sup> This then enables the organisations to implement their strategies through obtaining necessary IS resources and capabilities. In this respect, RBT explores outsourcing as a strategic decision or option.

The external acquisition of resources, however, can result in a level of dependence between the client and vendor firm, as described by the RDT (Pfeffer and Salancik, 1978). This resource dependency actually emerges from the external environment's control of those resources (e.g. IT), which an organisation needs to effectively function and to countervail uncertainty (Kotter, 1979). Yet, organisations will enter into exchange relationships with other organisations to obtain critical resources that cannot be generated internally. This level of dependence is determined by the importance of the resource for the client, the number of potential suppliers and the switching costs to work with another supplier. To avoid that a resource dependency leads to 'a state of strategic vulnerability' careful evaluation of the sourcing option is essential (Kern and Willcocks, 1996).

#### *5.1.2. IT outsourcing as the relationship between client and vendor (i.e. market)*

The two other theories of the contingency model describe and explain the relationship dimension of transactions, such as the sourcing of IT. The TCT considers internal and external organisational forms of handling transactions (Coase, 1937; Williamson, 1975). IT outsourcing offers a solution that can decrease the production costs (due to economies of scale on the supplier side), but potentially increases the transaction costs (e.g. for monitoring the supplier's performance).

The transaction costs are, however, not the only aspect of the relationship that deserves consideration, and ACT provides a complementary perspective. The relationship between an IT vendor (agent) and client (principal) can be regarded as a contract, in which the agent is delegated with the performance of services (Jensen and Meckling, 1976, p. 308). Thus the focus is on the most efficient contract arrangements between the agent and principal. In terms of outsourcing, ACT, provides an excellent approach for evaluating the relative advantages of the different internal and external organisation arrangements for handling contracts between the potential outsourcing client and provider. The decisive factors are those that ACT describes as the factors that influence the magnitude of the agency costs: outcome uncertainty, risk aversion, programmability of provider's behaviour, outcome measurability and the length of the agency relationship. These, then shape the outsourcing decision.

#### *5.2. Combining RBT, RDT, TCT, and ACT—the contingency model*

Cheon et al. (1995) combine the four theories into a contingency model, which takes into consideration the different variables that directly influence the focus of each of the theories (Fig. 1). Taking these into consideration, the framework can help to evaluate the situation under which sourcing applications from an ASP may or may not be appropriate.

The model offers a means to analyse the IT outsourcing phenomenon from both an

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<sup>4</sup> IS/IT capability refers to 'an assembly of skills, techniques, and know how developed over time that enable an organization to acquire, deploy and leverage IT investments in pursuit of business strategies.' (Willcocks and Feeny, 1996: p. 5).

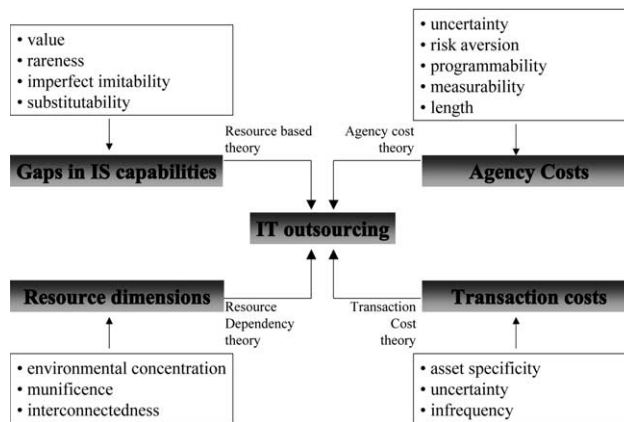


Fig. 1. Theoretical contingency model for studying outsourcing (Cheon et al., 1995).

economic and a strategic perspective, which matches with the pattern identified by McLellan et al. (1995) and others (see Appendix A) as the most common underlying outsourcing drivers. Here, the model is not expected to uncover every complexity but it is expected to contribute to a more detailed understanding, and also assist in developing a set of refined propositions that could be validated in future follow-up research. Thus, our purpose here is limited to illustrating the potential of an under-utilised framework for analysing ASP situations, and developing propositions that will be useful to practitioners and researchers alike.

## 6. Emerging research propositions

Based on the close relationship of the ASP model to outsourcing, we argue that the decision making issues that are relevant and summarised by Cheon et al. (1995) in their model will also be relevant for understanding the ASP option. In turn, we use the theoretical model as a basis for defining a number of propositions that form the basis for this explorative research. The four theories discussed each provide a different angle to the ASP option and together provide a useful starting point for further future investigations.

While our case sample represents only a small number of ASPs, the cases still illustrate a sufficient diversity in ASP characteristics, business models and client scenarios to allow us to develop the propositions below. The following discussion explores the reasoning behind the propositions, and elicits a number of supporting findings. It also highlights the differences between ASPs, leading us to a number of managerial suggestions.

### 6.1. Proposition 1 (informed by resource based theory)

Using an ASP is a strategic decision to fill gaps in IS resources and capabilities that enable an organisation to carry out a specific strategy.

The cases illustrated the needs of clients and the solutions ASPs are able to provide.

Opus, for example, as a marketing agency that depends heavily on their messaging system, has tried unsuccessfully to maintain and manage their services in-house. Constant problems and dissatisfaction showed that Opus was not able to allocate the necessary IT resources and capabilities to maintain the critical communication service. Netstore was able to resolve these problems for Opus, by providing a complete messaging solution in the form of a MS Exchange service that was fully managed and maintained by their experienced technology and application specialists. Our research found that this hosting and application proved to be not only a cost efficient, but also an extremely fast solution to their difficulties.

The other cases also revealed situations where clients benefited from access to ASP resources and capabilities. Thus Corio basically enabled Excite@Home's rapid market growth, while USi empowered US West's sales agents by providing them with essential Siebel based relationship management services that assisted them in managing their customers and overall sales process. Similarly, EC-Gate developed a solution that resolved some of the efficiency problems that the construction industry was not able to alleviate by themselves. All of the cases, in turn, highlighted in different scenarios how an ASP can play a role in filling vital gaps in IT resources and capabilities.

## 6.2. Proposition 2 (informed by resource dependency theory)

ASP clients become highly dependent on the ASP due to the importance of the service provided, the small number of alternative suppliers and the cost of switching suppliers.

The exchange relationship between an ASP and client results in varying degrees of dependency on the applications and services sourced from the provider. The degree of dependency will vary from case-to-case. This is clearly illustrated, for example, by the service provided by EC-Gate. The pivotal role that EC-Bouw plays as a 'market maker' and EC-Gate as the technology platform provider suggests a high level of interdependency. The resulting e-commerce platform that functions as an online community or electronic marketplace is of crucial importance, though, to all participants, especially in terms of ameliorating inefficiencies in the trading process. This brought definite cost benefits to the participants. At the time of the research, this was the only online community available for the construction industry in Europe, and thus no alternative supplier existed to switch to or compare with. Considering all the specific business rules that EC-Gate implemented into the electronic market system, a switch to another platform or supplier would also likely result in a long lead-time and significant switching costs to re-invent the logic underlying this marketplace. In this way, the customers of EC-Bouw, partly unwittingly, became highly dependent on the EC-Gate for this service and the attached efficiency benefits.

Some of the other scenarios display a similar interdependency. For example, we found Excite@Home utilising an integrated suite of Corio's applications to support several of its business processes, including financials, HRM, ERP and CRM. A similar integrated solution would require a comparable ASP to have partnerships with the same combination



of ISVs underpinning Excite@Home's application suite, making switching unrealistic. Moreover, the integration efforts required for switching are likely to be prohibitive. In turn, there is a high level of dependency. Similarly, Netstore's relationship with Opus supports the above proposition, considering at the time of the research, the few alternative suppliers available in the market able to provide an MS Exchange based messaging solution.

In contrast, in the USi–US West case we did not identify a significant level of dependency. The Siebel based relationship management functionality was available in other application suites. Therefore, the service provided by USi was essential, but could most likely be easily replaced by another application suite. The same or alternative applications that US West sources from USi was being offered also by others, so a lock-in as such was not evident. In addition, since limited integration effort had been required at the outset, we see switching costs as relatively low. The degree of interdependency in this case was low, due to the range of alternative suppliers and the relatively low switching costs as a result of limited integration services. However, potential customer need to be aware of this aspect (as outlined in the proposition) to decide on whether a long-term supplier lock-in may be of concern, as has emerged in many more traditional IT outsourcing arrangements (Lacity and Willcocks, 2001).

### *6.3. Proposition 3 (informed by transaction cost theory)*

The transaction costs for working with an ASP are relatively low due to low asset specificity and low uncertainty, as a result of the commoditisation of the service provided by the ASP.

As stated earlier, the ASP business model is based on offering mission critical, but also commodity type application services to many clients simultaneously. A commodity service generally implies the necessity of a more standard offering that can be easily adopted, applied and used by many potential clients. The commoditisation of the service provided by the ASP can lead to low asset specificity, low uncertainty and a high transaction frequency. Yet the commoditisation of the ASP offering is not applicable in all cases. For example, the services provided by Netstore and EC-Gate can be described as commodity services, but not so those of Corio and USi. The asset specificity for the clients of Netstore and EC-Gate was low due to the absence of additional transaction specific investments. In both cases clients were not required to purchase, for example, extra and specific hardware to run the applications, nor was there a need to invest in application specific licenses or specialized IT personnel. The services, in turn, could be regarded as rather standardized, since many clients were making use of the same application set. Uncertainty was minimised as a result of knowing in advance what product and service were likely to be obtained from the ASP; furthermore, the availability and performance of that service could be easily monitored. These characteristics of the applications and services offered by Netstore and EC-Gate, therefore, made them a relatively low transaction cost solution.

On the other hand, these characteristics could not be identified in the case of USi.

However, in Corio's case, we found the service could not be characterised as commodity. For example, in the Excite@Home scenario a set of applications had been identified that were necessary, yet others were set aside, despite previous high investments in them. This could be regarded as a high asset specificity to initiate the transaction between Corio and Excite@Home. Also, there was a high degree of uncertainty due to the high level of integration services necessary to cater for the sourced applications, that in essence defined Excite@Home's business. The results and fit with the business needs therefore could not be predicted nor specified in detail in advance, resulting in a high level of uncertainty. Excite@Home were thus treated more in terms of a strategic partnership by Corio, as the returns on investment were pushed much further into the future (see Willcocks and Kern, 1998).

#### *6.4. Proposition 4 (informed by agency cost theory)*

Agency costs—consisting of monitoring costs for the principal, bonding costs by the agent and residual loss of the principal—will increase in the long run due to outcome uncertainty caused by technological change.

This proposition addresses the uncertainty of the long-term value of the ASP offering for the client as a result of technological change. The novelty of ASP development and the early stage of the client ventures made it difficult to find supporting data for this proposition. Therefore, the cases only provided limited findings to discuss this proposition.

In general, the agency costs were determined by the costs associated with monitoring whether the ASP delivers on its promise, whether it achieves the suggested costs benefits and ensures satisfaction levels. Of course, the overarching uncertainty is whether the ASP will deliver the promised services as specified in the SLAs. Monitoring costs for clients were also affected in at least three ways by technological changes in ASP market. Firstly, it was uncertain if an ASP would be able to cater for technological advances in general through the existing service agreements. Secondly, it was not clear whether ASPs would make new technological benefits available to clients—a common scenario in more traditional cost reduction IT outsourcing arrangements (Kern and Willcocks, 2001). Thirdly, if an ASP offers technological advances, the implications for service levels and pricing arrangements remain uncertain. Clients therefore should throughout the deal carefully monitor the ASP in respect to technological changes in the market and their response to offering these, even if it means reducing service levels and further minimising the cost base of deal. While this seems a common-sense proposition, it is important to point out that research into more traditional types of IT outsourcing regularly finds this 'informed buying' and technology monitoring capability underdeveloped (Kern and Willcocks, 2001; Lacity and Willcocks, 2001).

In the cases we found bonding costs also affected by potential technological changes. It is essential to give clients an option to integrate technological innovations into their business processes. This can increase client satisfaction, but also ensures closer ties between the parties. If the client feels assured that the ASP will keep them abreast of developments then there is no need for switching. In turn, it is essential that the ASP makes

these contract investments to bond the client and maintain satisfaction. However, it also clears that technological changes will affect the prices of hardware and software continuously and, the price/performance ratio for processors and disk capacity will thus fall steadily. We therefore argue it is absolutely essential that these changes are adequately reflected in the contractual, and especially, the cost arrangements. In this and associated research (Kern et al., 2002), few ASPs actually considered these arrangements.

The monitoring costs, bonding costs and margin were subject to change for EC-Gate, USi and Corio due to technological advances. The cases indicated that any potential change in the application functionality affected service levels and pricing. For example, EC-Gate demanded re-negotiation of the contract for any new functionality, leading to an increase in overall costs (due to additional negotiation costs). Moreover, both clients of USi and Corio evolved their single application usage models over time (according to interviewees) into a combination of different applications. From our research, it was not clear how these ASPs had responded to the new demands for improved functionality and how these new requirements affected service costs. Consequently, we found the cases not offering, as yet, sufficient support for the proposition. However, historically, in earlier IT outsourcing grounds, there has been plenty of evidence for this proposition, making it an important consideration for any netsourcing analysis (see Currie and Willcocks, 1998; Lacity and Hirschheim, 1993a,b; Willcocks and Lacity, 1998).

#### *6.5. Proposition 5 (informed by transaction cost theory and resource based theory)*

Compared to larger firms, small and medium sized companies are especially interested in ASPs because they can get access to strategic resources which are often prohibitively costly yet essential for these smaller and medium-sized firms to remain resource competitive against large enterprises.

The proposition emphasises that ASPs provide IT resources necessary for firms, especially SME's, to remain competitive without incurring a significant cost increase. The client scenarios of Netstore and EC-Gate seem most representative of how firms have been making use of ASPs. Both of these cases offer support for the proposition. Looking at EC-Gate's electronic marketplace, it was clear from the services, applications and value added services on offer to participants, that they were getting significant benefits from this ASP solution. The resources required to build such a system were not available to a single player, but were essential for dealing with trade process inefficiencies. EC-Gate addressed this specific need of construction firms by not only bringing the market players together, but also by improving the efficiency of the overall trade process through additional application services and value-added services. Real benefits for the clients/participants emerged, then, in terms of sharing costs for the development and operation of this system by working with EC-Gate. Netstore, on the other hand, was able to operate Opus' messaging services at significantly lower costs, with less problems, due to their third-party status, and hence at a higher quality than Opus was able to do previously internally. Using Netstore's resources in this way turned out to be of strategic importance to Opus, especially since their messaging systems were business critical. Consider another

of Netstore's other clients. A similar service was provided to a subsidiary of a large company that otherwise also had difficulty in obtaining access to the much needed IT resources internally. Therefore, not only the size of a company, but also the scale of the operations of a business division can determine the level of interest in an ASP solution. This highlights the potential of this solution for small, medium, but also large sized firms.

#### *6.6. Proposition 6 (informed by resource based theory and resource dependency theory)*

Acceptance of the ASP model will be due to the relatively weak pool of IS resources and capabilities of clients and the beneficial environmental conditions of an increased number and diversity of viable ASPs.

The final proposition describes the relation that exists between the early rapid growth and future market direction of ASPs and the early and likely future scarcity of skilled IT personnel. In the case of Opus, the difficulty of finding specialized IT personnel for maintaining their messaging system was stated as one of the primary reasons for working with Netstore. For the other cases, relative difficulties in securing and retaining IT personnel definitely influences behind selecting the ASP option.

The proposition raises the question whether ASPs themselves will succeed in attracting and retaining sufficient skilled IT personnel. This was certainly an issue in the 1999–2000 period of IT skills shortage. Much depends on the perceived viability of the ASP in question, and the sustainability of specific ASPs during the shakeout of 2001, moving into 2002, has served to make these judgements difficult. Generally, though, we believe that the overall case findings do provide sufficient support for this proposition, as ASPs base their service strength on the traditional IT outsourcers' economies of scale argument with regard to specialist IT skills and technology base.

## **7. Conclusions and further research**

The paper explored the ASP sourcing option, revealing, for customers, that it raises many of the issues and managerial problems associated with more traditional forms of IT outsourcing. By developing an understanding of what possibilities the ASP solution can offer, but also being aware of what some of the potential drawbacks can be, we used the theoretical outsourcing contingency model developed by Cheon et al. (1995) to formulate six ASP propositions. These comprise what theory suggests as key issues for evaluating an IT outsourcing option and integrate what our research revealed as essential issues that customers should be aware of and potentially use to define a set of evaluation criteria for an ASP solution. We discussed each of the propositions in detail, allowing us to point out to a number of key managerial implications, but also point to some of the inherent risks.

Table 4 above summarises the ASP option along its benefits and the potential risks, which according to the theory we had broadly categorized into business, i.e. resourcing and economic issues. In terms of business demands, it is clear that the gap that exists between available and required IT resources and capabilities to address a specific problem or execute a strategy can be overcome by working with an ASP.

Table 4  
Findings on benefits and potential risks of working with an ASP

Type	Benefits	Potential risks
Business	Fills gaps in IT resources and capabilities to address problem or execute strategy	High level of dependence on the ASP for customised solutions
	Low level of dependence for commodity applications offered by alternative suppliers as well	Uncertain if and how ASP responds to technological change
	Enables SME's and divisions of larger corporations to gain access to specialised technical solutions	No certainty whether ASP can cater for changing business needs
Economic		Uncertain if ASP can attract and retain sufficient IT personnel
	Low transaction costs for commodity applications	Customised solutions increase the transaction costs
	Lower costs as result of scale advantages for SME's and divisions of larger corporations	Price can increase as consequence of ASP's response to technological change

The danger here, though, is that it often makes the client highly dependent on the ASP, especially where applications and services are restricted to only a small number of alternative ASPs. On the other hand, in terms of the economic issues, the level of commoditisation of the applications and services sourced from an ASP will determine the transaction costs. Transaction costs can be reduced in the case where standardized or template-driven applications and services are sourced, but this does not apply to more customized solutions. The level of value-added services provided by the ASP makes the solution more specific to the customer and thus leads to a higher degree of uncertainty when it comes to integrating, for example, technological advances. This seemed to be particularly the case in long-term deals where it is uncertain if and how an ASP will respond to changes in technology and the customer's business requirements. It may be well as technology innovations and a client's business demands change, an ASP will no longer be able to offer an appropriate solution, economies of scale and expertise. Switching may become necessary, yet at this early (2001) stage of ASP market evolution most customers will not have thought that far ahead. One consequence is that customers should be aware that switching or bringing the service back inhouse, i.e. insourcing will incur significant additional costs and may require significant pre-contract contingency planning.

Our findings further suggest that the ASP solutions provided to date are of primary interest to small and medium sized companies and business divisions of larger corporations due to the scale advantages and specialized technical solutions that can be generated. However, although eventual large growth continues to be predicted for the ASP market as the model expands into a wider netsourcing market space, ASPs and associated models still have to prove whether they can successfully concentrate and retain skilled IT personnel and that they can be financially viable. Potential customers, in turn, should carefully

evaluate whether entering into an ASP solution can cater for a firms service requirements for the long run. The ASP option, like outsourcing, is based on a 2–5 year venture (ITAA, 2000) and thus requires careful forecasting of service demands to ensure it remains a costs efficient solution over the contract life. The inherent risk here of the ASP model is the growing gap between IT needs and an ASP's capability and resource-base.

The contingency model proved to be useful in combining a strategic and economic perspective for investigating the ASP option. The underlying theories offered room to derive a number of propositions. One major limitation, though, of the theory is its lack of a technical perspective. This needs to be integrated to make this theoretical framework more relevant for studying ASPs. Additionally, the framework does not provide any guidelines how the different perspectives are combined or weighted to develop a well-based decision or evaluation of the ASP/IT outsourcing option. This needs to be addressed by employing it in a number of empirical studies and by possibly doing a meta-research study that focuses on what aspects of the theory have received most attention by companies in the past. In this way, relevant weightings to the various issues raised by the theories can be added.

Finally, we suggest that further research should investigate the propositions in a larger scale field study to validate whether these propositions apply. This research should investigate the differences in business models and offerings of ASPs and how this relates to the advantages/benefits and disadvantages/risks of the ASPs option. We also suggest further research should investigate several ASP–client relationships in-depth and for a longer period of time. This seems crucial to understand the long-term effects and management issues of working with an ASP.

## Appendix A

Table A1.

Table A1  
Applied theories in IT outsourcing research

IT outsourcing literature	Theories used
Apte et al. (1997)	Empirical research
Ang and Toh (1998)	Production cost theory Transaction cost theory Financial theory
Cheon et al. (1995)	Resource-based theory Resource-dependence theory Transaction cost theory Agency cost theory
Clark et al. (1995)	Transaction cost theory Power and politics
Cronk and Sharp (1995)	Organisational theory: core competences, value chain, competitive advantage Transaction cost theory

Table A1 (continued)

IT outsourcing literature	Theories used
Currie and Willcocks (1998)	Empirical research
Jurison (1995)	Transaction cost theory Classical financial theory (risk management)
Kern (1999)	Transaction cost theory Relational contract theory Inter-organizational relationship theory
Klepper and Jones (1998)	Transaction cost theory
Lacity and Hirschheim (1993a,b)	Transaction cost theory Political model
Lee and Kim (1999)	Social exchange theory Power political theory
de Looff (1997)	Division of labour and coordination Transaction cost theory Agency cost theory Competitive strategy Political model
McLellan et al. (1995)	Organisational theory: strategic network, dynamic network, competitive advantage
Quinn and Hilmer (1994)	Organisational theory: core competences
Smith and Mitra (1998)	Financial theory

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