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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 Elsevier Science B.V. All rights reserved.

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

181 see a shakeout and consolidation of players down to something like 300, and in its 226
182 maturing phase an aggregation shift as large outsourcing providers, such as IBM, EDS 227
183 and CSC determined their netsourcing strategies. These firms would be the ones most able 228
184 to offer the long investment time, resource capabilities, expertise, technology and 229
185 geographical presence to make ASP-type business models attractive to global Fortune 230
186 1000 businesses. 231

187 The objective of this paper is to investigate what ASPs have to offer and how benefits 232
188 and risks associated with the ASP model demand consideration from companies 233
189 evaluating the ASP option. In particular, the research focuses on what potential customers 234
190 need to take into account if their goal is to outsource with an ASP. There is little research 235
191 available on ASPs upon which can be drawn, especially in terms of decision and selection 236
192 criteria. More importantly, our research revealed the lack of a theoretical underpinning 237
193 that could be used to analyse the ASP sourcing option. To address this shortcoming, we 238
194 undertook an exploratory research study into a number of ASP service offerings and their 239
195 client scenarios. 240

196 We also contribute a theoretical outsourcing framework adapted from Cheon et al. 241
197 (1995) to help to organize and interpret data and define avenues for further research 242
198 into ASPs. The combination of resource-based theory (RBT), resource dependency theory 243
199 (RDT), transaction cost theory (TCT) and agency cost theory (ACT) in the theoretical 244
200 framework allowed for the development of a number of key propositions that can guide 245
201 future research. The conceptual framework is particularly useful for this purpose because 246
202 it covers those strategic, business and financial factors most often identified as the primary 247
203 motivators for outsourcing (see Lacity and Willcocks, 1998; McLellan et al., 1995). For 248
204 practitioners, this paper will be of particular interest as it explores the ASP model in terms 249
205 of products and services offered. In addition, a set of business, strategic, and economic 250
206 considerations are identified that can help guide interested companies in their evaluation 251
207 and decision making process about whether or not to opt for an ASP. 252

208 The remainder of the paper is structured as follows. The Section 2 provides an 253
209 exploration of the ASP option in terms of potential benefits and risks, before outlining 254
210 the research approach to investigating ASP solution in four specific case settings. 255
211 Following the case studies we briefly introduce the conceptual framework that was 256
212 employed to interpret, discuss, and develop a set of propositions. This set forms the 257
213 basis of the last part of the paper, which contains the conclusions, management 258
214 implications and suggestions for further research. 259
215 260
216 261

217 **2. Exploring the ASP option** 262 218 263

219 Core to the ASP concept is that a provider can offer a set of applications in a one-to- 264
220 many hub-like arrangement from its centrally managed server farms via the Internet or 265
221 virtual private network (IDC, 1999; Kern et al., 2002). The business and economic logic of 266
222 this option is one of being able to host and offer these applications as a service package to 267
223 many clients, in an endlessly scaleable model. The resulting argument for the ASP option 268
224 are in turn very similar to that of IT outsourcing—one of achieving, offering and 269
225 delivering economies of scale that a customer company could not realize internally. 270

271 The economy of scale benefits touted generally arise in areas of applications and their 316
272 licenses, network costs, technology, and integration and implementation expertise 317
273 (Walton et al., 2000). 318

274 As such the ASP concept is relatively simple in its set-up. It entails primarily hosting 319
275 and provision of applications. The actual servers on which these applications reside, and 320
276 the network connection that enables the delivery of the application over a network is often 321
277 sourced from a third-party (Green and Henderson, 2000). As with outsourcing, ASPs 322
278 define their product services with customer-specific service level agreements (SLAs). 323
279 SLAs define the basis of the client–ASP relationship and function as a guarantee for 324
280 the availability and performance levels of the application services. The following outlines 325
281 some of the key services that need to be covered in the SLAs (see Kern and Willcocks, 326
282 2000; Walton et al., 2000): 327

- 283 328
- 284 329
- 285 1. The availability of the application. This needs to include the network and server 330
286 operations, data security, backup operations, application monitoring and technical 331
287 support. 332
- 288 2. The performance of the products and including the network performance, server 333
289 performance and application performance levels. 334
- 290 3. The fit between the business needs and the application, which has to include application 335
291 planning, application configuration, application upgrades, application customisation, 336
292 and application integration (e.g. with legacy systems). 337
- 293 4. The application support levels. This can include user training and education, and 338
294 application support for end-users or administrators. 339

295 340

296 An exploration of the product and service offerings of a large cross section of ASPs as at 341
297 2001 indicated that a wide range of business applications can be accessed through an ASP 342
298 model (based on IDC (1999) and our market review of ASP offerings in Kern et al. 343
299 (2001)). The primary element of the product offerings is formed around the application 344
300 portfolio and its management. Applications in general are said to support or enable certain 345
301 business processes in organisations. When these applications are then grouped (Cole, 346
302 1999) according to business processes, certain types can be identified as being available 347
303 from ASPs (Table 1). 348

304 As Table 1 illustrates, the applications offered cover all traditional packages, that can be 349
305 offered as templates. A packaged application contains business logic that supports specific 350
306 business processes and is customised to meet specific customer needs, but does not exceed 351
307 a 20% customisation of business logic. This is distinct from the bespoke developed 352
308 applications that are custom built and company specific (Cole, 1999; Kern et al., 2002). 353

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310 2.1. Potential benefits and risks of the ASP option 355

311 356

312 The original rapid growth of the ASP market suggests that companies could perceive 357
313 ASPs as offering substantial benefits. However, the claims and benefits touted often cannot 358
314 be substantiated due to the lack of long-term customer experiences, and hence case studies. 359
315 Nevertheless, based on our extensive market study (Kern et al., 2001), this section 360

361	Table 1	406
362	Range of applications on offer from ASPs (source—classification of application and examples based on Cole	407
363	(1999), identification of ASP offering based on an extensive set of Internet articles and ASP websites)	408
364	Business process and application type	409
365	Examples	410
366	Finance and accounting	411
367	Human resource management	412
368	Customer relationship management and sales force support	413
369	Manufacturing and logistics	414
370	Supply chain management	415
371	Product development	416
372	E-commerce	417
373	Industry specific (vertical application suites)	418
374	Desktop productivity	419
375	Messaging and collaboration services	420

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

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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).

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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).

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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

451 Table 2 496
 452 Potential benefits and risks of using an ASP (source, McCall (1999), Ring et al. (2000), and ITAA (2000) review 497
 453 of an extensive set of Internet articles and customer case descriptions) 498

Type	Benefits	Potential risk	499
454 455 456 457 458 459 460 461 462	Business Reduces the need to attract and retain skilled IT professionals Enables company to concentrate on strategic use of IT Enables small and medium sized companies to use tier-1 applications (e.g. ERP, SCM and CRM) Application scalability enables rapid growth of companies	Loss of control and high level of dependence on ASP Inability of ASP to deliver quality of service: lack of skills and experience	500 501 502 503 504 505 506 507
463 464 465 466 467 468 469 470 471	Technical Fast and easy application deployment Higher degree of application standardisation Access to wide range of applications Application maintenance simplified and performed by ASP Simplified user-support and training	Level of customisation and legacy application integration offered by ASP is insufficient Reliability and speed of delivery due to bandwidth limitations Low capability of ASP to deal with security and confidentiality issues	508 509 510 511 512 513 514 515 516
472 473 474 475 476	Economic Low total cost of ownership Low up-front investments in hardware and software Improved cost control as result of predictable subscription costs	Pricing changes by ASP unpredictable for application updates and services	517 518 519 520 521

477 522
 478 found the low up-front investment and the range of services offered were particularly 523
 479 attractive. The main benefits pursued by all were guaranteed performance levels, fast 524
 480 implementation times, scalability, predictable costs, service expertise and guaranteed 525
 481 application uptime. On the other hand, the main concerns raised were the uncertainty 526
 482 whether the claimed cost advantages could actually be realised. For 19% this defined 527
 483 the main reason not to choose an ASP, while the lack of customised applications and 528
 484 the uncertainty about an ASP's development and the market in general defined the other 529
 485 two chief reasons. By mid-2001 in a survey of some 400 companies we found 27% in a 530
 486 current ASP deal, with 50.2% actively evaluating the ASP option in the next 6 months. 531
 487 Respondents registered similar concerns as listed above, but a striking finding was how 532
 488 uninformed many potential customers were about the nature of ASPs and their offerings, 533
 489 and how their ASP risk evaluations were consistently higher than those recorded by actual 534
 490 customers (Kern et al., 2001). 535

491 The above materials provide some indications of the overarching rationale behind the 536
 492 decisions whether or not to use an ASP. It remains a question, however, whether the 537
 493 reasons provided are applicable in all situations. It also does not describe under what 538
 494 conditions the benefits can be realised. The size of companies, capability and offering 539
 495 of the ASP, and the type of application sourced all seemed to influence the fitness of 540

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

631 various CD-ROM databases), research studies from professional market research 676
 632 companies such as IDC, Gartner, Forrester, ASPstreet, ASPnews, ASP Industry 677
 633 Consortium, Durlacher, and various trade press articles. We were also able to attend the 678
 634 first European ASP summit in March 2000 in London, UK. 679

635 Two pilot interviews were held with companies that planned to enter the ASP market. 680
 636 Attendance of an IT-fair (CEBIT, Hannover, Germany) allowed us to set-up meetings with 681
 637 Baan and SAP to discuss the ASP market, their (future) offerings and client cases. These 682
 638 two try-out interviews led to a number of research avenues and ideas to structure the 683
 639 interviews and the protocol. The researchers then conducted 15 interviews at various 684
 640 locations in Europe (i.e. UK, The Netherlands, Belgium and Germany) including company 685
 641 headquarters, hotels and conferences. The interviewees with IT managers, CTOs, 686
 642 managing directors, CEOs, senior outsourcing directors, sales and marketing managers, 687
 643 strategic business development manager, CIO, and consultants were between 90 and 688
 644 180 min in length. All interviews were conducted using open-ended questions informed 689
 645 in many ways by our understanding of IT outsourcing and our knowledge of the ASP 690
 646 market. The semi-structured interview protocol³ was designed to elicit data about ASP 691
 647 practice, offerings, customers, benefits and disadvantages, selection and evaluation 692
 648 practices. 693

649 Data analysis went through numerous iterations to formulate a coherent and consistent 694
 650 overview of the ASP firms. With each iteration cycle—following the hermeneutic circle 695
 651 principle to case study development (Klein and Myers, 1999)—the cases took shape. The 696
 652 initial drafts of the cases were of course very descriptive in nature, but it provided a 697
 653 mechanism for sorting and categorising the extensive data and further enabled us to 698
 654 move towards a more in-depth analysis through subsequent iterations. 699

655 While we pursued the research in this way, our objective below is limited to outlining 700
 656 the case histories so as to provide insight into how ASPs are developing and the types of 701
 657 services offered and customers attracted. From this platform of understanding we then use 702
 658 the case study material to show the value of, and give illustrative empirical support for, the 703
 659 theoretical framework and propositions we then develop. 704

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662 4. Case studies 707

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665 4.1. EC-Gate 710

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667 EC-Gate has been active as an ASP, since 1997 with dual headquarters in Canada and 712
 668 The Netherlands. It focuses on facilitating co-operation between supply chain players by 713
 669 offering b2b e-commerce platform solutions. Its industrial target, in turn, is primarily 714
 670 vertical markets for which it has developed unique expertise and knowledge especially 715
 671 in terms of supply chains and their management. EC-Gate to date has developed specific 716
 672 solutions for construction, trading, transport and distribution companies, and for financial 717
 673 institutions. All industries and companies that are likely to benefit from a portal-facilitated 718
 674 market solution are thus considered to be their primary target market. 719

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

721	<i>4.1.1. Applications and services</i>	766
722	Oracle products define the basis of EC-Gate's application solution, covering ERP,	767
723	e-commerce, back office automation and other functions and processes. EC-Gate does	768
724	not, however, provide template driven or standardised application services. It offers	769
725	instead customised solutions built on Oracle's application suite. Clients are thus not	770
726	bound or limited by the functionality of 'off-the-shelf' applications. This is crucial, as	771
727	EC-Gate's CEO argued, that the functionality must be easily expandable to meet clients	772
728	changing business needs.	773
729	EC-Gate's method of developing b2b e-commerce solutions is based on the principle of	774
730	separating the various technical layers, i.e. communication, presentation and data layer	775
731	and by keeping the core standard application engine. In so doing, they can simplify and	776
732	ensure efficient maintainability and manageability of application services. Due to the	777
733	resulting complete customisation of the presentation layer, the client gets in essence a	778
734	tailor-made solution. Scalability on the other hand, of this solution is achieved through the	779
735	use of standard web browsers interfaces at the client side and the use of otherwise scalable	780
736	Oracle products.	781
737		782
738	<i>4.1.2. Partnership model</i>	783
739	For market knowledge, EC-Gate has partnered with Cap Gemini, Ernst and Young,	784
740	PricewaterhouseCoopers and KPMG amongst others. In addition, it has a number of close	785
741	ties with specialised Internet companies that assist in developing the functionality around	786
742	the core application engine of the technical solutions. On the other hand, its main	787
743	application and technology partners include Oracle, Compaq and Sun. They provide the	788
744	components that form the base of the technical and application platform. EC-Gate itself	789
745	takes care of the hosting and operates for this a large data-centre in Canada that is linked to	790
746	its customers via a virtual private network. Its connectivity, however, is sourced from a	791
747	number of telecom operators. For its recent WAP service offering EC-Gate has entered	792
748	into a partnership with Ericsson.	793
749		794
750	<i>4.1.3. Client scenario</i>	795
751	One of the two most highly profiled client scenarios of EC-Gate is EC-Bouw, a portal	796
752	developed specifically for the construction industry in Europe. EC-Bouw is a vertical	797
753	portal that offers online information, a trade platform and specific applications that can	798
754	assist managers in co-ordinating and planning their projects. Together this platform	799
755	enables EC-Gate's customers to interact with the various players in the construction	800
756	supply chain and facilitates product trading. It caters specifically for contractors,	801
757	merchants and manufacturers. The second client scenario is the Canadian Bank, to	802
758	whom EC-Gate provides customer relationship management services and e-commerce	803
759	solutions. This is another type of solution based on the customised Oracle suite of	804
760	applications.	805
761		806
762	<i>4.2. Netstore</i>	807
763		808
764	Netstore was founded in 1996 in the United Kingdom by two managers who saw a	809
765	growing need and market as the Internet took off for disaster recovery and online backup	810

811 services. Building on their previous experience in this area, Netstore was set-up to provide 856
812 similar services through an ASP business model. According to the founders, sourcing 857
813 these services from an ASP allowed companies to then focus on their core business, be 858
814 assured of their IT services and make their overall IT costs more predictable. 859
815 860

816 4.2.1. Applications and services 861

817 The products provided by Netstore can be divided into systems management applica- 862
818 tions and collaborative applications. The systems management applications include 863
819 amongst others an online backup and recovery service, and a secure PC-refresh services, 864
820 which fully installs and configures software and data on new laptops. These systems 865
821 management services are especially targeted at the distributed enterprises that operate a 866
822 large mobile workforces. More recently Netstore expanded its portfolio into collaborative 867
823 applications through a partnership with Microsoft. This allowed Netstore to be one of the 868
824 first to provide Microsoft Exchange's functionality over the Internet, which includes 869
825 messaging, scheduling and task management. 870
826 871

827 4.2.2. Partnerships 872

828 Netstore operates its own data centres in Bracknell, UK, making it completely inde- 873
829 pendent of any data centre or co-location service providers. They find this fundamental to 874
830 ensure control, accountability and security for their services. The system management 875
831 applications are based on Connected Corporation's service package, which allows 876
832 Netstore to focus on delivering those applications services where it has the greatest 877
833 economies of scale while sourcing-in the rest. For the collaborative applications, a partner- 878
834 ship was established with Microsoft in December 1999. For all of its products and services 879
835 Netstore uses a pricing model that is based on a flat-fee-per-seat, per-product, per-month. 880
836 881

837 4.2.3. Client scenario 882

838 A particular insightful customer scenario of Netstore's services is Opus Group, a 883
839 marketing service group for IT and telecom businesses. To maintain close relations 884
840 with its clients Opus depends on extensive electronic messaging services. Opus operated 885
841 its messaging system for years, but continued to experience problems that resulted in non- 886
842 availability of its email system and consequential service disruptions. Even when the 887
843 email system was available, Opus was not satisfied with its performance. While Opus 888
844 was still looking for solutions, Netstore proposed through an ASP model to host an 889
845 application solution based on Microsoft Exchange that would instantly resolve most of 890
846 their service performance and quality problems. Opus was keen to use this service and 891
847 agreed to pay a flat fee per-seat per-month for an agreed contract period of 2 years with 892
848 Netstore. 893
849 894

850 4.3. USinternetworking 895

851 896
852 USinternetworking (USi) was founded in 1998 in the United States and is often quoted 897
853 as the largest ASP in terms of customers and potential business (Green and Henderson, 898
854 2000). For its services USi constructed its own global network with data centres in the US, 899
855 Europe and Asia. The connection between the various data centres and the Internet is 900

901 handled by major Internet backbone providers, such as UUNET. USi offers packaged 946
 902 applications that are hosted in its data centres and can be accessed over the Internet 947
 903 through a proprietary interface called iMAP. These applications are also supported by 948
 904 its global services platform (GSP), which allows USi to offer it locally and globally to 949
 905 customers. With its iMAP and GSP portfolio, USi targets primarily mid-sized enterprises 950
 906 and a selection of business divisions of multinational organizations. 951

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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

991 developing integration competencies and skills, IT capabilities and value-added services 1036
 992 to deliver the ‘best-of-breed’ application solutions to customers. The backdrop to Corio’s 1037
 993 business model was clearly based and informed by Jonathan Lee’s (the founder) 1038
 994 experiences with IT outsourcing. His previous start-up company, DSCI, had offered orga- 1039
 995 nisations a complete IT team for hire to deal with the lack of internal IT capabilities. 1040
 996 1041

997 *4.4.1. Application and services* 1042

998 The application service Corio offers is referred to as the intelligent enterprise. Corio 1043
 999 describes this service as a securely hosted suite of applications spanning all business 1044
 1000 processes, by integrating best-of-breed applications that are customised to specific indus- 1045
 1001 tries and customer needs. The resulting suite of applications covers the following business 1046
 1002 processes: ERP (Peoplesoft) including e-procurement, financial management, HRM, 1047
 1003 manufacturing (also Flextronics) and supply chain management (Flextronics), business 1048
 1004 intelligence (Cognos), e-commerce (Broadvision, CommerceOne), and CRM (Siebel). To 1049
 1005 be able to offer such services, Corio had developed a technical integration model called 1050
 1006 Orion[®], which simplifies by use of templates the integration and customisation task of the 1051
 1007 various applications. With the integrated application platform Corio can offer a set of 1052
 1008 integrated functionality to multiple customers through a single interface point, that caters 1053
 1009 for customers unique requirement. This implied that if a customer wanted only an 1054
 1010 e-commerce solution to begin with, but then at a later point needed a HRM solution, 1055
 1011 Corio could easily slot-in the extra functionality as needed in its Orion framework. Besides 1056
 1012 the implementation and integration services, Corio also handles all the management, 1057
 1013 administration and support related to the applications and the underlying technology it 1058
 1014 offers as its ASP solution. However, it sources all its technology from a group of strategic 1059
 1015 partners. 1060
 1016 1061

1017 *4.4.2. Partnerships* 1062

1018 For its data centre operations, Corio relies on partners such as Exodus and Concentric. 1063
 1019 The hardware is sourced from Sun and DELL, while network equipment comes directly 1064
 1020 from Cisco. The Internet connectivity is provided by the backbone provider MCI 1065
 1021 Worldcom. For the application services Corio offers, it has established a number of 1066
 1022 strategic partnerships with a range of well respected suppliers that can cater for most 1067
 1023 organisational processes, including Peoplesoft, SAP, Siebel, Cognos, CommerceOne, 1068
 1024 Broadvision, Flextronics and others. To enhance its application and legacy system inte- 1069
 1025 gration capabilities, Corio has further established partnerships with system integrators 1070
 1026 such as Cambridge Technology Partners, Beacon Application Services, Datastudy Inc., 1071
 1027 e-Force and Emerald solutions. 1072
 1028 1073

1029 *4.4.3. Client scenario* 1074

1030 The first major client of Corio was Excite, an Internet portal that merged with @Home 1075
 1031 networks. From the beginning Excite planned to operate a complex ERP package to handle 1076
 1032 its finance. After selecting Peoplesoft financials, Excite@Home also started to make use of 1077
 1033 the complete Peoplesoft ERP package and Siebel’s CRM applications. Throughout its 1078
 1034 growth Corio has provided Excite@Home with the necessary application services to 1079
 1035 facilitate scalability of services and ensure rapid growth. Corio’s experience of managing 1080

1081 and integrating large sets of applications was of particular benefit for Excite@Home as it 1126
 1082 grew in market share and overall company size. By sourcing its IT externally from Corio, 1127
 1083 it saved considerable application and technical costs, but also minimised its invests in 1128
 1084 additional technical and human resources. Corio, in turn, stands as a prime example of an 1129
 1085 ASP that can cater over time for all application needs, even though it really only combines 1130
 1086 the technology and applications from others into an application service solution that spans 1131
 1087 the whole enterprise. Yet this flexibility allows Corio to offer a application solution for all 1132
 1088 existing and potential requirements. 1133
 1089 1134
 1090 1135

1091 5. An analytical framework for studying ASPs 1136

1092 Organizations considering an outsourcing option need to perform a thorough 1137
 1093 evaluation process to come to a weighed decision and sourcing strategy (Willcocks 1138
 1094 et al., 2000). To date, IT outsourcing has been evaluated through several theories 1139
 1095 (see Appendix A), the most prominent being TCT. Researchers have argued that the 1140
 1096 underlying financial reasoning inherent in TCT is insufficient for analysing outsour- 1141
 1097 cing decisions (Kern and Willcocks, 2001). In fact, recent outsourcing research 1142
 1098 revealed that TCT leaves many aspects unexplained and even contradicts effective 1143
 1099 outsourcing practice (Lacity and Willcocks, 1995; Kern, 1999). In turn, a broader 1144
 1100 perspective integrating multiple approaches need to be adopted that explains, as 1145
 1101 McLellan et al. (1995) point out, why companies form IT outsourcing alliances 1146
 1102 for financial and strategic reasons. Clark et al. (1995), p. 222 equally emphasise 1147
 1103 that the use of TCT and power and politics can provide a much richer understand- 1148
 1104 ing: ‘...each contributing significantly to a more informed understanding of the 1149
 1105 trend toward the outsourcing of IT services.’ For the same reasons, this paper adopts 1150
 1106 the contingency framework by Cheon et al. (1995), which we found to offer a solid 1151
 1107 base for investigating the ASP phenomenon. This model and the underlying theories 1152
 1108 are briefly described below. 1153
 1109 1154

1110 5.1. Towards a theoretically-based contingency model of IT outsourcing 1155

1111 1156
 1112 Cheon et al. (1995) use four distinct theories from two different disciplines (strategic 1157
 1113 management and economic theory) which they combine into a contingency model and 1158
 1114 argue should guide empirical research into IT outsourcing. The four theories that they 1159
 1115 aggregate are RBT, RDT, TCT, and ACT. 1160
 1116 1161

1117 5.1.1. Information technology as a resource 1162

1118 Two theories in the contingency model describe the implications of generating 1163
 1119 resources internally or obtaining resources externally. IT can be seen as one such resource. 1164
 1120 The RBT describes how organisation can gain a competitive advantage by differentiating 1165
 1121 themselves in their collection of resources (resource heterogeneity) and inability of other 1166
 1122 firms to obtain comparable resources (resource immobility). By undertaking outsourcing 1167
 1123 firms can maintain their distinctiveness of products, or their low cost position, through co- 1168
 1124 operating with their IT outsourcing partner. 1169
 1125 1170

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

resource and capabilities gaps.⁴ 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

⁴ 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).

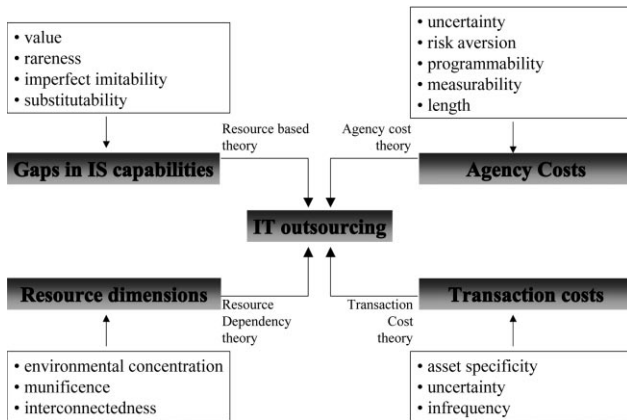


Fig. 1. Theoretical contingency model for studying outsourcing (Cheon et al., 1995).

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.

1351 Opus, for example, as a marketing agency that depends heavily on their messaging system, 1396
 1352 has tried unsuccessfully to maintain and manage their services in-house. Constant 1397
 1353 problems and dissatisfaction showed that Opus was not able to allocate the necessary 1398
 1354 IT resources and capabilities to maintain the critical communication service. Netstore 1399
 1355 was able to resolve these problems for Opus, by providing a complete messaging solution 1400
 1356 in the form of a MS Exchange service that was fully managed and maintained by their 1401
 1357 experienced technology and application specialists. Our research found that this hosting 1402
 1358 and application proved to be not only a cost efficient, but also an extremely fast solution to 1403
 1359 their difficulties. 1404

1360 The other cases also revealed situations where clients benefited from access to ASP 1405
 1361 resources and capabilities. Thus Corio basically enabled Excite@Home's rapid market 1406
 1362 growth, while USi empowered US West's sales agents by providing them with essential 1407
 1363 Siebel based relationship management services that assisted them in managing their 1408
 1364 customers and overall sales process. Similarly, EC-Gate developed a solution that resolved 1409
 1365 some of the efficiency problems that the construction industry was not able to alleviate by 1410
 1366 themselves. All of the cases, in turn, highlighted in different scenarios how an ASP can 1411
 1367 play a role in filling vital gaps in IT resources and capabilities. 1412

1368 1413
 1369 *6.2. Proposition 2 (informed by resource dependency theory)* 1414
 1370 1415

1371 ASP clients become highly dependent on the ASP due to the importance of the 1416
 1372 service provided, the small number of alternative suppliers and the cost of switching 1417
 1373 suppliers. 1418
 1374 1419
 1375 1420

1376 The exchange relationship between an ASP and client results in varying degrees of 1421
 1377 dependency on the applications and services sourced from the provider. The degree of 1422
 1378 dependency will vary from case-to-case. This is clearly illustrated, for example, by the 1423
 1379 service provided by EC-Gate. The pivotal role that EC-Bouw plays as a 'market maker' 1424
 1380 and EC-Gate as the technology platform provider suggests a high level of interdepend- 1425
 1381 ency. The resulting e-commerce platform that functions as an online community or 1426
 1382 electronic marketplace is of crucial importance, though, to all participants, especially in 1427
 1383 terms of ameliorating inefficiencies in the trading process. This brought definite cost 1428
 1384 benefits to the participants. At the time of the research, this was the only online community 1429
 1385 available for the construction industry in Europe, and thus no alternative supplier existed 1430
 1386 to switch to or compare with. Considering all the specific business rules that EC-Gate 1431
 1387 implemented into the electronic market system, a switch to another platform or supplier 1432
 1388 would also likely result in a long lead-time and significant switching costs to re-invent the 1433
 1389 logic underlying this marketplace. In this way, the customers of EC-Bouw, partly 1434
 1390 unwittingly, became highly dependent on the EC-Gate for this service and the attached 1435
 1391 efficiency benefits. 1436

1392 Some of the other scenarios display a similar interdependency. For example, we found 1437
 1393 Excite@Home utilising an integrated suite of Corio's applications to support several of its 1438
 1394 business processes, including financials, HRM, ERP and CRM. A similar integrated 1439
 1395 solution would require a comparable ASP to have partnerships with the same combination 1440

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.

1531 However, in Corio's case, we found the service could not be characterised as commodity. 1576
 1532 For example, in the Excite@Home scenario a set of applications had been identified that 1577
 1533 were necessary, yet others were set aside, despite previous high investments in them. This 1578
 1534 could be regarded as a high asset specificity to initiate the transaction between Corio and 1579
 1535 Excite@Home. Also, there was a high degree of uncertainty due to the high level of 1580
 1536 integration services necessary to cater for the sourced applications, that in essence defined 1581
 1537 Excite@Home's business. The results and fit with the business needs therefore could not 1582
 1538 be predicted nor specified in detail in advance, resulting in a high level of uncertainty. 1583
 1539 Excite@Home were thus treated more in terms of a strategic partnership by Corio, as the 1584
 1540 returns on investment were pushed much further into the future (see Willcocks and Kern, 1585
 1541 1998). 1586

1542 6.4. Proposition 4 (informed by agency cost theory) 1587

1543 Agency costs—consisting of monitoring costs for the principal, bonding costs by the 1590
 1544 agent and residual loss of the principal—will increase in the long run due to 1591
 1545 outcome uncertainty caused by technological change. 1592
 1546 1593
 1547 1594

1548 This proposition addresses the uncertainty of the long-term value of the ASP offering 1595
 1549 for the client as a result of technological change. The novelty of ASP development and 1596
 1550 the early stage of the client ventures made it difficult to find supporting data for this 1597
 1551 proposition. Therefore, the cases only provided limited findings to discuss this proposition. 1598
 1552 1599

1553 In general, the agency costs were determined by the costs associated with monitoring 1600
 1554 whether the ASP delivers on its promise, whether it achieves the suggested costs benefits 1601
 1555 and ensures satisfaction levels. Of course, the overarching uncertainty is whether the ASP 1602
 1556 will deliver the promised services as specified in the SLAs. Monitoring costs for clients 1603
 1557 were also affected in at least three ways by technological changes in ASP market. Firstly, it 1604
 1558 was uncertain if an ASP would be able to cater for technological advances in general 1605
 1559 through the existing service agreements. Secondly, it was not clear whether ASPs would 1606
 1560 make new technological benefits available to clients—a common scenario in more 1607
 1561 traditional cost reduction IT outsourcing arrangements (Kern and Willcocks, 2001). 1608
 1562 Thirdly, if an ASP offers technological advances, the implications for service levels and 1609
 1563 pricing arrangements remain uncertain. Clients therefore should throughout the deal 1610
 1564 carefully monitor the ASP in respect to technological changes in the market and their 1611
 1565 response to offering these, even if it means reducing service levels and further minimising 1612
 1566 the cost base of deal. While this seems a common-sense proposition, it is important to 1613
 1567 point out that research into more traditional types of IT outsourcing regularly finds this 1614
 1568 'informed buying' and technology monitoring capability underdeveloped (Kern and 1615
 1569 Willcocks, 2001; Lacity and Willcocks, 2001). 1616

1570 In the cases we found bonding costs also affected by potential technological changes. It 1617
 1571 is essential to give clients an option to integrate technological innovations into their 1618
 1572 business processes. This can increase client satisfaction, but also ensures closer ties 1619
 1573 between the parties. If the client feels assured that the ASP will keep them abreast of 1620
 1574 developments then there is no need for switching. In turn, it is essential that the ASP makes 1620
 1575

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

1711	of Netstore's other clients. A similar service was provided to a subsidiary of a large	1756
1712	company that otherwise also had difficulty in obtaining access to the much needed IT	1757
1713	resources internally. Therefore, not only the size of a company, but also the scale of the	1758
1714	operations of a business division can determine the level of interest in an ASP solution.	1759
1715	This highlights the potential of this solution for small, medium, but also large sized firms.	1760
1716		1761
1717	<i>6.6. Proposition 6 (informed by resource based theory and resource dependency theory)</i>	1762
1718		1763
1719	Acceptance of the ASP model will be due to the relatively weak pool of IS resources	1764
1720	and capabilities of clients and the beneficial environmental conditions of an	1765
1721	increased number and diversity of viable ASPs.	1766
1722		1767
1723		1768
1724	The final proposition describes the relation that exists between the early rapid growth	1769
1725	and future market direction of ASPs and the early and likely future scarcity of skilled IT	1770
1726	personnel. In the case of Opus, the difficulty of finding specialized IT personnel for	1771
1727	maintaining their messaging system was stated as one of the primary reasons for working	1772
1728	with Netstore. For the other cases, relative difficulties in securing and retaining IT person-	1773
1729	nel definitely influences behind selecting the ASP option.	1774
1730	The proposition raises the question whether ASPs themselves will succeed in attracting	1775
1731	and retaining sufficient skilled IT personnel. This was certainly an issue in the 1999–2000	1776
1732	period of IT skills shortage. Much depends on the perceived viability of the ASP in	1777
1733	question, and the sustainability of specific ASPs during the shakeout of 2001, moving	1778
1734	into 2002, has served to make these judgements difficult. Generally, though, we believe	1779
1735	that the overall case findings do provide sufficient support for this proposition, as ASPs	1780
1736	base their service strength on the traditional IT outsourcers' economies of scale argument	1781
1737	with regard to specialist IT skills and technology base.	1782
1738		1783
1739	7. Conclusions and further research	1784
1740		1785
1741	The paper explored the ASP sourcing option, revealing, for customers, that it raises	1786
1742	many of the issues and managerial problems associated with more traditional forms of IT	1787
1743	outsourcing. By developing an understanding of what possibilities the ASP solution can	1788
1744	offer, but also being aware of what some of the potential drawbacks can be, we used the	1789
1745	theoretical outsourcing contingency model developed by Cheon et al. (1995) to formulate	1790
1746	six ASP propositions. These comprise what theory suggests as key issues for evaluating an	1791
1747	IT outsourcing option and integrate what our research revealed as essential issues that	1792
1748	customers should be aware of and potentially use to define a set of evaluation criteria for	1793
1749	an ASP solution. We discussed each of the propositions in detail, allowing us to point out	1794
1750	to a number of key managerial implications, but also point to some of the inherent risks.	1795
1751	Table 4 above summarises the ASP option along its benefits and the potential risks,	1796
1752	which according to the theory we had broadly categorized into business, i.e. resourcing	1797
1753	and economic issues. In terms of business demands, it is clear that the gap that exists	1798
1754	between available and required IT resources and capabilities to address a specific problem	1799
1755	or execute a strategy can be overcome by working with an ASP.	1800

1801 Table 4
1802 Findings on benefits and potential risks of working with an ASP

	Type	Benefits	Potential risks	
1805	Business	Fills gaps in IT resources and capabilities to	High level of dependence on the ASP for	1846
1806		address problem or execute strategy		customised solutions
1807		Low level of dependence for commodity	Uncertain if and how ASP responds to	1848
1808		applications offered by alternative suppliers as		technological change
1809		well		1850
1810		Enables SME's and divisions of larger	No certainty whether ASP can cater for	1851
1811		corporations to gain access to specialised technical		changing business needs
1812		solutions		1853
1813			Uncertain if ASP can attract and retain	1854
1814	Economic	Low transaction costs for commodity applications	sufficient IT personnel	1855
1815				1856
1816		Lower costs as result of scale advantages for	Customised solutions increase the	transaction costs
1817		SME's and divisions of larger corporations	Price can increase as consequence of ASP's	1858
1818			response to technological change	1859

1819 The danger here, though, is that it often makes the client highly dependent on the ASP, 1846
 1820 especially where applications and services are restricted to only a small number of 1847
 1821 alternative ASPs. On the other hand, in terms of the economic issues, the level of 1848
 1822 commoditisation of the applications and services sourced from an ASP will determine 1849
 1823 the transaction costs. Transaction costs can be reduced in the case where standardized or 1850
 1824 template-driven applications and services are sourced, but this does not apply to more 1851
 1825 customized solutions. The level of value-added services provided by the ASP makes the 1852
 1826 solution more specific to the customer and thus leads to a higher degree of uncertainty 1853
 1827 when it comes to integrating, for example, technological advances. This seemed to be 1854
 1828 particularly the case in long-term deals where it is uncertain if and how an ASP will 1855
 1829 respond to changes in technology and the customer's business requirements. It may be 1856
 1830 well as technology innovations and a client's business demands change, an ASP will no 1857
 1831 longer be able to offer an appropriate solution, economies of scale and expertise. 1858
 1832 Switching may become necessary, yet at this early (2001) stage of ASP market evolution 1859
 1833 most customers will not have thought that far ahead. One consequence is that customers 1860
 1834 should be aware that switching or bringing the service back inhouse, i.e. insourcing will 1861
 1835 incur significant additional costs and may require significant pre-contract contingency 1862
 1836 planning. 1863

1837 Our findings further suggest that the ASP solutions provided to date are of primary 1846
 1838 interest to small and medium sized companies and business divisions of larger corpora- 1847
 1839 tions due to the scale advantages and specialized technical solutions that can be generated. 1848
 1840 However, although eventual large growth continues to be predicted for the ASP market as 1849
 1841 the model expands into a wider netsourcing market space, ASPs and associated models 1850
 1842 still have to prove whether they can successfully concentrate and retain skilled IT person- 1851
 1843 nel and that they can be financially viable. Potential customers, in turn, should carefully 1852
 1844 evaluate whether entering into an ASP solution can cater for a firms service requirements 1853
 1845 for the long run. The ASP option, like outsourcing, is based on a 2–5 year venture (ITAA, 1854

1891 2000) and thus requires careful forecasting of service demands to ensure it remains a costs 1936
 1892 efficient solution over the contract life. The inherent risk here of the ASP model is the 1937
 1893 growing gap between IT needs and an ASP’s capability and resource-base. 1938

1894 The contingency model proved to be useful in combining a strategic and economic 1939
 1895 perspective for investigating the ASP option. The underlying theories offered room to 1940
 1896 derive a number of propositions. One major limitation, though, of the theory is its lack of a 1941
 1897 technical perspective. This needs to be integrated to make this theoretical framework more 1942
 1898 relevant for studying ASPs. Additionally, the framework does not provide any guidelines 1943
 1899 how the different perspectives are combined or weighted to develop a well-based decision 1944
 1900 or evaluation of the ASP/IT outsourcing option. This needs to be addressed by employing 1945
 1901 it in a number of empirical studies and by possibly doing a meta-research study that 1946
 1902 focuses on what aspects of the theory have received most attention by companies in the 1947
 1903 past. In this way, relevant weightings to the various issues raised by the theories can be 1948
 1904 added. 1949

1905 Finally, we suggest that further research should investigate the propositions in a larger 1950
 1906 scale field study to validate whether these propositions apply. This research should investi- 1951
 1907 gate the differences in business models and offerings of ASPs and how this relates to the 1952
 1908 advantages/benefits and disadvantages/risks of the ASPs option. We also suggest further 1953
 1909 research should investigate several ASP–client relationships in-depth and for a longer 1954
 1910 period of time. This seems crucial to understand the long-term effects and management 1955
 1911 issues of working with an ASP. 1956

1912 1957
 1913 1958
 1914 **8. Uncited references** 1959
 1915 1960

1916 Glaser and Strauss, 1967; Kirk and Miller, 1986; Kirsch, 1997; Lee, 1991; Mitnick, 1961
 1917 1975; Parkhe, 1993; Ross, 1973; Smith, 1990; Stake, 1994; Strauss and Corbin, 1998; 1962
 1918 Walsham, 1995; Yin, 1989. 1963
 1919 1964
 1920 1965

1921 **Appendix A** 1966
 1922 1967

1923 Table A1. 1968
 1924 1969

1925 Table A1 1970
 1926 Applied theories in IT outsourcing research 1971

IT outsourcing literature	Theories used	
Apte et al. (1997)	Empirical research	1972
Ang and Toh (1998)	Production cost theory	1973
	Transaction cost theory	1974
	Financial theory	1975
Cheon et al. (1995)	Resource-based theory	1976
	Resource-dependence theory	1977
	Transaction cost theory	1978
	Agency cost theory	1979
		1980

1981	Table A1 (<i>continued</i>)	2026
1982		2027
1983	IT outsourcing literature	2028
	Theories used	
1984		2029
1985	Clark et al. (1995)	2030
1986		2031
1987	Cronk and Sharp (1995)	2032
1988		2033
1989		2034
1990	Currie and Willcocks (1998)	2035
1991	Jurison (1995)	2036
1992	Kern (1999)	2037
1993		2038
1994		2039
1995	Klepper and Jones (1998)	2040
1996	Lacity and Hirschheim (1993a,b)	2041
1997		2042
1998	Lee and Kim (1999)	2043
1999		2044
2000	de Looft (1997)	2045
2001		2046
2002		2047
2003		2048
2004		2049
2005	McLellan et al. (1995)	2050
2006	Quinn and Hilmer (1994)	2051
2007	Smith and Mitra (1998)	2052
2008		2053

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