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AN INTEGRATIVE MODEL OF CLIENTS' DECISION TO ADOPT AN APPLICATION SERVICE PROVIDER

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Abstract

Application Services Providers (ASPs) exploit the economics of delivering commercial off-the-shelf software over the Internet to many dispersed users. In this paper, an integrative model for ASP adoption is developed, which includes economic, strategic and social factors. This model will examine the individual effect of these factors and their interactions.

Keywords: Application service providers, economic, strategic and social perspectives

Introduction

Since 1990, the explosion in Internet connectivity and increased bandwidth has made hosting online applications technologically feasible and economically attractive. An application service provider (ASP) is “a company that manages and delivers application capabilities to multiple entities from a data center across a wide area network” (ASP Industry Consortium, 2001, p.8). ASP adoption decisions require a broad comprehensive consideration of various factors. Moreover, the ASP model differs from traditional IS outsourcing models with respect to vendor, client, and applications attributes (Yao and Murphy, 2002). These differences are expected to result in decision models for ASP adoption that are distinct from those in traditional IS outsourcing.

However, few empirical studies have focused on the ASP adoption decision from a comprehensive view (Lee, et al., 2002). This research employs an integrative approach to investigate the important determinants of this decision from economic, social and strategic perspectives. Specifically, it will investigate the following questions: *What are the economic, strategic and social factors impacting customers' decision to adopt an ASP and what are the interactions among these factors?* This study will explain customer attitudes towards an online application delivery from a more holistic view and help ASPs reevaluate their business strategies.

Theoretical Background

Principal outsourcing theories can be classified according to three perspectives: economic, social and strategic. Each theory sheds its unique insight on the ASP adoption decision. Considering special features of the ASP business model, certain economic, social and strategic factors will work both individually and interactively.

Economic Perspective

The economic perspective is concerned with the coordination and regulation of economic media in firms' transactions with one another by using transaction-cost and agency-cost theories (Ang and Straub, 1998; Grover, et al., 1998).

Uncertainty refers to the amount of change in the environment (market, economy, industry and technology). Risks brought about by high uncertainty will deter outsourcing by increasing costs in contract negotiation, monitoring and coordination (Nam, et al., 1996). However, short-term ASP contracts give clients the opportunity to frequently reevaluate an ASP's performance and force the ASP to pay more attention to service quality. Also, ASPs can help clients quickly adapt to changing environments by performing their IT functions while reducing costs.

Asset Specificity refers to the uniqueness of application services acquired from ASPs. As it is difficult for an ASP to benefit from economies of scale by delivering highly customized applications (Grover, et al., 1996), clients who outsource customized applications have to sacrifice economic benefits or flexibility. High asset specificity will also reduce the likelihood of a client switching to another ASP.

Cost Benefits refer to the internal production cost (material, labor, and time) minus the external costs of adopting an ASP. Kern, et al. (2002) argue that the principal advantage of the ASP model is the predictable application usage costs. The low costs associated with the ASP model are cited as the key reason for attracting companies to adopt ASP model (Jayatilaka, et al., 2002).

Social Perspective

Social exchange theory emphasizes the exchange relationship developed over time as well as the behaviors of the two specific actors within the relationship (Blau, 1964). It has been used to investigate the different antecedents of interorganizational relationships, such as trust, vendor capabilities, and personal relationships (Lee, et al., 2002).

ASP's Capability: An ASP's capabilities consist of both business and technological capabilities, i.e., the understanding of a client's business requirements (Lee and Kim, 1999), and the ability to deliver promised applications. A customer's belief that an ASP is able to satisfy its requirements is dependent on the strength of the ASP's capabilities. Beatty, et al. (1996) proposed that a client's trust in a vendor will increase when there is the perception of solid vendor capability, even without actual vendor experience.

Social and Personal Relationship refers to an informal relationship between individuals, which comes from normative exchange in previous activities (Kern, 1997). Trust evolves through gradual growth of knowledge and understanding of people during personal and social interactions. Many ASPs form their initial customer base on a broad personal network of founders in a target industry.

Trust means the belief in the feasibility and benefits of the ASP business model, and the belief that a specific ASP has both the intention and the ability to provide quality services in the context of ASPs. Trust between organizations forms the basis of a business relationship. Trust plays a critical role in establishing and developing an inter-organizational relationship.

Strategic Perspective

Resource-based theory and resource-dependency theory form the basis of the strategic perspective. They examine outsourcing activities by balancing internal and external resources to achieve high strategic performance (Grover, et al., 1998).

IT deficiency removal is the extent to which an organization needs to acquire external IT expertise to compliment its strategic development requirements. With advantages in some specific applications, ASPs can help companies to realize strategic goals that would be difficult to realize with their internal resources. By collaborating with an ASP, customers will have access to the newest technologies and gain technical knowledge.

Application Importance: Important applications are those severely impacting companies' production, operations, and competitive advantage (Grover, et al., 1998). Outsourcing these applications will make clients more dependent on an ASP, which, in turn will increase switching costs. Thus, critical IS resources should be maintained in-house (Lee, et al., 2002).

Moderating Effects

Trust will also moderate the effects of economic and strategic determinants upon the degree of ASP adoption. Trust established before a formal contractual relationship, can reduce transaction costs, and lower performance evaluation costs, thereby increasing

cost benefits. Moreover, customers will believe that a trustable ASP will protect their interests in uncertain environments and they will be willing to outsource products with high asset specificity.

Similarly, trust will influence the relationship between strategic determinants and the degree of ASP adoption. A client’s strong trust in an ASP can raise that client’s confidence in renting more important applications from the ASP in order to gain competitive strategic advantages (Lacity and Willcocks, 2001) and best compensate for a client’s IT deficiency.

Research Model and Hypothesis

Taking all these factors together, I developed an integrative model for ASP adoption (Figure 1). The dependent variable, the degree of ASP adoption, refers to the extent to which a company actually outsources its internal applications to an ASP (i.e., actual behaviors). I propose the following hypotheses:

- Hypothesis 1: High uncertainty will increase the cost benefits associated with ASP adoption.*
- Hypothesis 2: High asset specificity will reduce the cost benefits associated with ASP adoption.*
- Hypothesis 3: The higher the costs benefits associated with ASP adoption, the larger the degree of ASP adoption.*
- Hypothesis 4: Closer social and personal relationships will increase clients’ trust in an ASP.*
- Hypothesis 5: The higher an ASP’s business and technology capabilities, the higher the level of client trust.*
- Hypothesis 6: The higher the level of client trust, the higher the degree of ASP adoption.*
- Hypothesis 7: The higher the application importance, the lower the degree of ASP adoption.*
- Hypothesis 8: The higher the degree of IT deficiency removal, the higher the degree of ASP adoption.*
- Hypothesis 9: Trust will moderate the relationship between cost benefits and degree of ASP adoption such that when trust is high there is a more positive relationship between cost and degree of ASP adoption.*
- Hypothesis 10a: Trust will moderate the relationship between application importance and degree of ASP adoption such that when trust is high there is a more positive relationship between application importance and degree of ASP adoption.*
- Hypothesis 10b: Trust will moderate the relationship between IT deficiency removal and degree of ASP adoption such that when trust is high there is a more positive relationship between IT deficiency removal and degree of ASP adoption.*

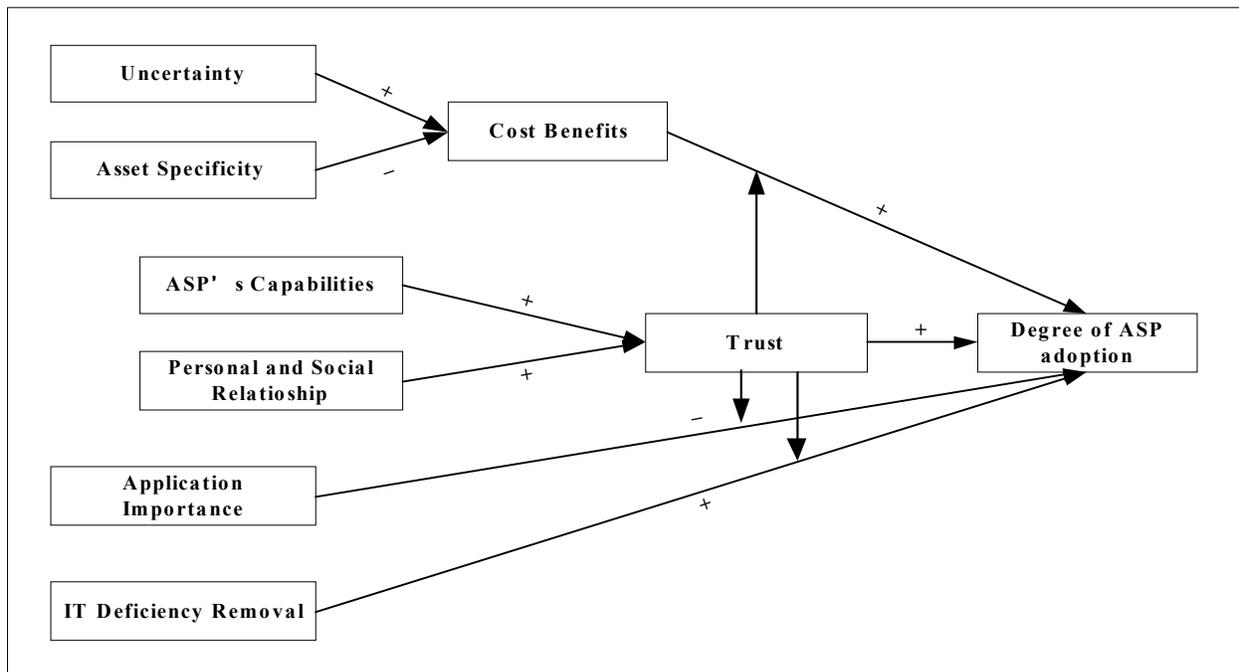


Figure 1. An Integrative Model for ASP Adoption

Research Design

This research adopts a positivist approach. Both quality and quantitative techniques will be used to test the conceptual model. In the qualitative part, I conduct a case study in a large public university that is considering outsourcing online education applications to an ASP. Multiple semi-structured interviews are conducted with key decision makers in this outsourcing project, including CIO of computing center, technical managers, directors and provost. These interviews will bring insights on understanding factors in ASP adoption decisions.

In the quantitative part, a self-administrated survey will be employed as the principal method to test the conceptual model. This study calls for data sources that are aware of the ASP business model and are carefully considering ASP adoption. Thus, 20 or more ASPs with relatively large customer bases will be identified from different industries. The study sample will consist of both technical and business decision makers in each ASP's customer organization, such as CIOs, CEOs and functional managers. As some ASPs also sell software licenses, the sample will include ASPs' current customers, prospective customers and customers still preferring in-house production. Thus information from both users and non-users of ASP services can be obtained. The total participants will be approximately 800.

Special attention will be given to the development and validation of the survey instrument. I have borrowed items from previously validated instruments to form the basis of the survey. Group interviews will be conducted among several practitioners to pretest the survey for construct validity and reliability. Then the revised survey will be further pilot tested among executive MBA students. Confirmative factor analysis will be used to statistically check construct validity and reliability. The instrument will be revised based on the results. After revision of the questionnaire, a web-based survey will be administered with five rounds of correspondence: pre-survey announcement, survey distribution, two follow-ups and thank you notes. Fax and mail surveys will be the alternatives for subjects who cannot be reached by email.

Currently, the survey questionnaire has been developed and ASP subjects have been identified. Group interviews for pretest are conducted in Spring 2003. After the ASP participation is confirmed, a formal web survey will be administered among their customers (Summer 2003). Structural equation modeling will be used for data analysis through the program LISREL.

Conclusion

This study makes a contribution for both researchers and practitioners. For researchers, it is the first to empirically examine the determinants of ASP adoption from an integrative perspective. This conceptual model contributes to the literature by incorporating economic, social and strategic perspectives for understanding ASP adoption. For practitioners, this study specifically focuses on the ASP market. Since ASPs are experiencing difficulty in growing, the findings can help ASPs to understand customers' considerations and to make adjustments in their services accordingly.

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