



The Outsourcing Unit Working Research Paper Series

Paper 14/1 – Cloud Services: The Great Equalizer for Small and Medium-sized Enterprises?*

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Outsourcing Cloud Services: The Great Equalizer for SMEs?

Abstract

Small-to-mid sized enterprises (SMEs) comprise over 99% of private businesses in many developed economies. Despite their vital role, SMEs have generally been slow to adopt information technologies (IT) and have poorer IT management capabilities compared to larger firms. Information Systems (IS) management and adoption is usually very different in an SME, with different pressures for IS adoption, including a shortage of slack resources for IT investment. Outsourcing to cloud providers may offer SMEs an unprecedented opportunity to access economically the same IT infrastructure and software as large-sized firms. Based on three case studies of SMEs and a survey of 55 cloud buyers, we find evidence that the outsourcing of cloud services is a great equalizer for SMEs. Cloud services outsourcing enabled the SMEs in this study to “rent” infrastructure and software without the prohibitive upfront capital costs of buying servers, paying expensive software licensing fees, or hiring additional IT staff. SMEs found additional benefits from cloud services outsourcing, such as accessing superior provider skills, data redundancy, and business continuity that could only be retained in-house at a great cost. The survey found that client firm size was not significantly related to cloud adoption, cloud drivers, cloud barriers (i.e. security concerns), satisfaction with cloud provider performance, or satisfaction with business value of cloud services. The conjecture and evidence for cloud services outsourcing as the great equalizer for SMEs must be further tested.

Outsourcing Cloud Services: The Great Equalizer for SMEs?

1. Introduction

“Small businesses will now have the ability to use the same tools and techniques that larger companies enjoyed for years.”-- Sahil Parikh, CEO, Synage

“With the cloud, individuals and small businesses can snap their fingers and instantly set up enterprise-class services.” -- Roy Stephan, Director of IT architecture and engineering, Intelligent Decisions

“The cloud services companies of all sizes; the cloud is for everyone. The cloud is a democracy.”-- Marc Benioff, founder of Salesforce.com.¹

Cloud computing is defined by the National Institute of Standards and Technology as “a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”² Companies can choose to build their own cloud services internally or companies can choose to source cloud services from outsourcing providers. Our research addresses this latter phenomenon—the outsourcing of cloud services—in the context of small-to-mid sized enterprises³ (SMEs).

SMEs are an important element of the economy. In the USA, small firms represent 99.7 percent of U.S. employer firms, employ 49.2 percent of all private sector employment, have generated 64 percent of net new jobs over the past 17 years and represent 33 percent of exporting value⁴. In addition, they have produced 13 times more patents per employee than large patenting firms⁵. This is similar in the UK where SMEs accounted for 99.9 per cent of all private sector businesses, 59.1 per cent of private sector employment and SMEs with 10 or more employees

¹ From “15 Memorable Cloud Computing Quotes”, <http://www.techno-pulse.com/2011/02/memorable-cloud-computing-quotes.html>

² NIST Cloud Computing Definition Published 25 October 2011, <http://www.nist.gov/itl/csd/cloud-102511.cfm>

³ There is no standard definition of an SME. Gartner defines small businesses as organizations with fewer than 100 employees and midsize enterprises as organizations with 100 to 999 employees. (<http://www.gartner.com/it-glossary/smbs-small-and-midsize-businesses>). The US Small Business Administration defines small businesses as companies with fewer than 1500 employees. <http://www.sba.gov/content/what-sbas-definition-small-business-concern>

⁴ Source: U.S. Census Bureau, SUSB, CPS; International Trade Administration; Bureau of Labor Statistics, BED; Advocacy-funded research, Small Business GDP: Update 2002-2010, www.sba.gov/advocacy/7540/42371

⁵ Source: Kathryn Kobe, 2007 (www.sba.gov/advo/research/rs299.pdf).

accounted for about a third of the value of UK exports⁶. In Australia, SMEs represent 99.6% of all employing businesses and employ 60% of all private sector employment⁷.

Information Technology (IT) offers SMEs greater efficiencies, connectivity to their customers and new service opportunities. However, SMEs have generally been seen to be slower to adopt IT and have poorer IS management capabilities than large firms (Levy and Power 2005). IS management and adoption is usually very different in an SME, with different pressures for IS adoption. Limitations include different owner-manager motivations, access to financial capital, availability of IS skills and desire for flexibility (Levy and Powell 2005). SMEs need to plan better their systems to support both efficiency and growth (Levy and Powell 2000; Salmeron and Bueno 2006; Street and Meister 2004). This is particularly important for mature SMEs (Reid 1999), with owner-manager interest and enthusiasm being a prime driver of both investment and its adoption (Premkumar and Roberts 1999). Cloud has the potential to address many of these challenges.

Cloud computing is considered to be the great equalizer between small and large client firms by many pundits, to which the quotes above attest. We are interested in investigating this conjecture further because there has been very little research or public attention on the outsourcing of cloud services by smaller firms. As one author from Datanet wrote, *“When big businesses decide to go on the ‘Cloud’, they make headlines in technical journals around the world....However, when small and medium enterprises (SMEs) go on the ‘Cloud’, hardly anyone notices.”*⁸ Furthermore, there is little research that has assessed the effects of client firm size on adoption and outcomes for outsourcing cloud services. Yang and Tate (2012) conducted a literature review of 205 peer-reviewed articles on cloud computing and cite just three articles that address SMEs: Truong (2010), Truong and Duster (2011), and Yogesh and Navonil (2010). At the end of the review, Yang and Tate (2012) suggest five research questions, one of which is “Will cloud computing help to mitigate the IS management problems typically experienced by small and medium-sized enterprises (SMEs)?” (p. 49).

Because of the importance of SMEs to most economies, the previous record of spotty IT adoption by SMEs due to IT financing, management, and skills challenges, and the potential for cloud services outsourcing to alleviate some of these challenges, this research asks two questions:

- What are the SME adoption processes and outcomes for cloud services outsourcing?
- Does size of client firm affect cloud adoption processes and outcomes?

⁶ Source: SME Statistics - Federation of Small Businesses, www.fsb.org.uk/stats ; <http://www.publications.parliament.uk/pa/ld201213/ldselect/ldsmall/131/13106.htm>

⁷ Source: ABS 8155.0, Australian Industry, 2005-6

⁸“How SMEs can Benefit Big From Cloud Computing” <http://www.datanet.co.uk/smesbenefitfromcloud.aspx>

2. Research Method

This research aims to understand the adoption process and outcomes for cloud services outsourcing by SME clients and to assess the degree to which client firm size affects cloud adoption and business outcomes. This paper is part of a larger project sponsored by Accenture, which calls for a study of 20 client firms spread across Australia, North America, and Europe and a large-scale sample survey. This paper is based on the first data collected in three small client firms and on an exploratory survey. The key informant interview and survey methods are explained below.

Key Informants

Interviews with key informants were deemed an appropriate method to explore the cloud services adoption process and outcomes by SME clients. Key informant interviews are in-depth interviews with experts who are most knowledgeable of the organization or issue (Parsons 2013). Interviewees are “key” in that they provide particularly important understandings of their collectivity because they have a particularly rich knowledge of the collectivity through their seniority or through their specialist roles in the setting (Bloor and Wood 2013). Interviews with key informants are also appropriate for understanding the participant’s own perspectives (Kvale 1996; Klein and Myers 1999), when seeking participation from busy or high-status respondents (Mahoney 1997), when seeking answers to questions in which the subject matter is sensitive (Mahoney 1997), and when seeking answers to why or how questions about contemporary events over which the researcher has little or no control (Fontana and Frey 1994; Yin 2003).

We designed the interview guide using insights from cloud-specific research (Yang and Tate 2012, Venters and Whitley 2012, Everest 2012). Where cloud services research had gaps, we relied on findings from a review of ITO research to provide insights for the interview guide (Lacity et al. 2010). The interview guide has open-ended questions for two units of analysis. At the organization level, questions focused on cloud strategy, stakeholder buy-in, current and future cloud adoption, cloud drivers, cloud barriers, and cloud providers. At the relationship level, clients were asked to focus on one significant cloud provider. These questions focused on provider selection, contractual governance, transition of work, ongoing delivery, relational governance, cloud outcomes, and overall lessons learned. Research sponsors reviewed the guide for clarity and understandability.

With a key informant method, the sample size is less relevant than targeting participants with full knowledge of the phenomenon under study, in this case, cloud computing (Creswell 1998; Ponterotto and Casas 1991; Seidler 1974). Key informants should be selected based on their knowledge of the issues and organizational position (Elmendorf and Luloff 2006). For this study, we conducted in-depth interviews with key informants from three client organizations between January 2013 and March 2013. Two client firms agreed to be identified, and one client firm is assigned the pseudonym “Art-World”. Key informants from the Dana Foundation included the Director of IT and two provider executives; from Diesel Direct, the CEO and Chief

Innovation Officer; and from “Art-World” the Head of Engineering. Interviews lasted between 45 minutes and 60 minutes. All participants were guaranteed anonymity to promote open and frank discussions. After reading the draft, the Dana Foundation agreed to be named. All interviews were tape recorded and transcribed.

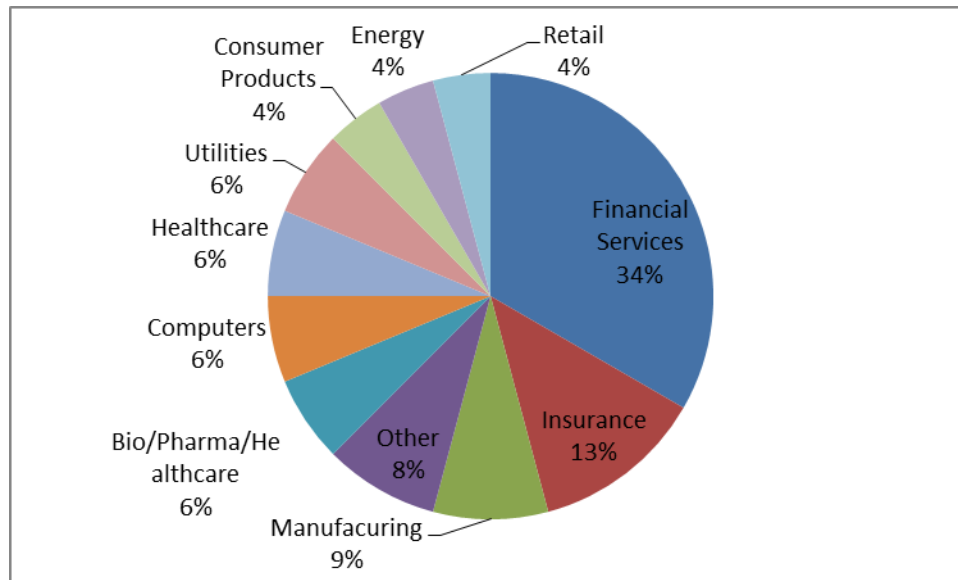
The firms range in size from 30 to 200 full time employees. IT department size ranged between 5 and 12 IT employees, although the IT employees at Art-World are mostly engineers working on algorithms that categorize and recommend works of art (see Table 1).

Table 1: Client Firm Size			
	Dana Foundation	Diesel Direct	Art-World
Number of Full-time Employees	30	200	40
Number of IT employees	5	6	12

To analyze the interviews, we first wrote case synopses. Then we wrote about the cloud adoption, cloud drivers, cloud barriers, and stakeholder buy-in. Next we analyzed one key cloud provider relationship and wrote about provider selection, contractual governance, relational governance, provider performance and outcomes for each case. Participants quoted in this paper were asked to review the paper for their comments, feedback, and permission to cite anonymous quotes. We also compared and contrasted interview responses with the survey responses.

2.2. Cloud Survey

The survey asked questions about current and future cloud services adoption, business drivers, security concerns, and outcomes in terms of client satisfaction with the business value of cloud services and with cloud provider performance. The survey was reviewed by members of the International Association of Outsourcing Professionals (IAOP). The survey was administered at the IAOP’s 2013 Outsourcing World Summit. At the World Summit, clients gathered in one ballroom (identity was verified at the entrance) and providers and advisors gathered in another ballroom for networking sessions. Mid-way through each session, participants were asked to fill in the paper survey. 133 delegates turned in completed surveys-- 55 clients, 59 providers and 19 outsourcing advisors. For this paper, we focused on client firms only. The client organizations operate in a diverse range of industries (see Figure1) with Financial Services (34%) and Insurance (13%) being the most represented. 52% of firms had fewer than 10,000 employees. The mean client firm size was 50,751 employees, the median was 30,000 employees and the range was 250 to 300,000 employees.



**Figure 1: Industry Represented in the Sample
(n=48 Client Responses to Industry Question)**

In the next sections, we summarize the relevant cloud/ITO literature and present the key informant and survey findings on (3) cloud adoption, (4) cloud drivers, (5) cloud barriers, (6) stakeholder buy-in, (7) provider selection, (8) contractual governance, (9) relational governance, (10) provider performance, and (11) business outcomes.

3. Cloud Adoption

What cloud services are SME client firms adopting? Do patterns of adoption differ by client firm size? In the literature review by Yang and Tate (2012), the authors identified six peer-reviewed articles on cloud computing adoption in businesses, of which most are mathematical modeling of ROI or of the make-or-buy decision, and none address adoption rates. Practitioner surveys, however, are available. A 2012 survey by the Everest Group of 346 people found that 31% of respondents had already adopted IaaS public cloud, 30% had already adopted IaaS private cloud, 38% had already adopted PaaS, and 57% had already adopted SaaS (Everest 2012). This sample included 32% of client firms that earn less than \$100 million in annual revenues. A survey of 1300 UK SMEs conducted by PeoplePerHour.com is reported to have found that 26% of the respondents have already adopted some type of cloud services.⁹ Sultan (2011) cites that 47% of SMEs in Easynet Connect's survey planned to adopt cloud services within the next five years. As far as our key informant sources, the cloud services adoption stories for the three SME client companies are summarized next.

⁹Please note, we could not find the original survey by PeoplePerHour.Com, but it was extensively quoted by itpro, ittoday, and other sites on the internet.

3.1. Key Informant Interviews

The Dana Foundation first adopted cloud services in 2010, including IaaS and SaaS and it plans to adopt PaaS soon (see Table 2). Diesel Direct adopted cloud services in 2012 and its entire infrastructure is now in cloud. Art-World never migrated to the cloud; the start-up was “born in the cloud,” including IaaS, PaaS, and SaaS. The percentage of IT budget for cloud services varies between 10% and 25% in the client companies. The Dana Foundation and Diesel Direct each have three cloud service providers; Art-World has one major provider, but it also uses Gmail and Google docs. Each of their adoption stories is summarized next.

Table 2: Adoption of Cloud Services			
	Dana Foundation	Diesel Direct	Art-World
First adopted Cloud	2010	2012	2010 (since inception)
Cloud Services	IaaS (Website hosting) PaaS (will adopt) SaaS (Office 365 email, Salesforce.com)	IaaS (Entire Infrastructure)	IaaS (Entire Infrastructure minus Databases) PaaS SaaS
Cloud Champion	Director of IT	CEO & Chief Innovation Officer	Head of Engineering
%IT budget for cloud provision	25%	20%	10%
Number of cloud providers	3	3	2

Dana Foundation’s Cloud Adoption. The Dana Foundation is a private philanthropic organization that supports medical research through grants, publications, and educational programs. Based in New York, this foundation was founded in 1950. The Dana Foundation has 30 employees overall, including five employees within the IT department and led by the Director of IT. The Dana Foundation initially adopted cloud provision in 2009 when it engaged an infrastructure provider to host their website. When the current Director of IT was hired in 2011, he immediately championed the idea that further cloud adoption could address the Dana Foundation’s need to upgrade IT infrastructure and services without investing a large amount of capital upfront. The Director of IT explained, *“We saw cloud computing as a way to right-size our expense ratio and deliver the same amount of technological services that the foundation needed.”* During his first two years, he adopted more IaaS, SaaS, and will soon adopt PaaS. In the IaaS space, the Dana Foundation plans to move 75% of their resources to a cloud provider that offers both private and public clouds by year end 2013. The Dana Foundation hosts its website and back-end tiers in the public cloud. In the SaaS space, the Dana Foundation is

adopting Salesforce.com to manage contacts and grants administration. The Director of IT's vision is to virtualize the entire office.

Diesel Direct's Cloud Adoption. Diesel Direct is a US-based company with a roaming fleet of diesel trucks that fills diesel tanks to 50,000 client sites and vehicles each week. Diesel Direct refills client's vehicles wherever the client is located—at a business, at a road stop, etc. The company was founded in 1998 with the idea that it would be cheaper to bring fuel to trucks when the trucks were not in use. Besides avoiding long lines at crowded fuel islands, the company adds value to clients through its IT-enabled systems that track fuel consumption, collect environmental and tax compliance evidence, plan refueling events and bill or bill back support. The company can deploy analytics to investigate fuel waste or shrinkage. Diesel Direct first adopted cloud provision in January 2012. The company's entire infrastructure is provisioned in a private cloud by a third-party provider. Microsoft Outlook and time management are sourced as SaaS. The remaining software is resident on the cloud, but managed by Diesel Direct. The CIO is also evaluating and planning to adopt Customer Relation Management SaaS solutions.

Art-World's Cloud Adoption. Art-World is a privately held SME that went live in 2011 with funding from several prominent business people. Its mission is to make art available to everyone. Art-World provides a free platform where anyone can discover and learn about art from hundreds of galleries, museums, foundations, and estates from all over the world. Art-World earns a commission when it connects an art collector to a gallery. The company adds value to the art community by assigning values to over 1000 attributes for each piece of art. For example, an attribute for Pop-Culture might assign the highest value to work by Andy Warhol, since Warhol is the iconic artist of this genre; Warhol would be assigned a zero for a French Impressionist attribute. As of 2013, over 21,000 pieces of art have been tagged by employees with backgrounds in Art History. These attributes allow art collectors to find works of art that meet their specific tastes or interests. So for example, if a collector likes a particular painting by Monet, he or she can search for artwork with similar attributes.

The Head of Engineering began, *"I have no transition story to tell"* because Art-World was *"born in the cloud."* The Head of Engineering was hired a year before launch. As a start-up, the costs of erecting a fully-staffed, in-house IT infrastructure were prohibitive, so the Head of Engineering built the IT capabilities with the help of a cloud provider. Other than switches for the office's wireless network and desktops, Art-World's entire infrastructure is in the cloud. The Head of Engineering said, *"We are 100% cloud computing shop. There was just no other way to do what needed to be done."* Art-World uses Gmail, Google docs, and the business applications run entirely on amazon's infrastructure through a relationship with its cloud provider. The cloud provider delivers all the technical support, including 24 hour support. Art-World also uses the cloud provider's add-ons for database services, analytics, and performance tracking. They also buy SaaS solutions for sales.

3.2. Survey Responses

Do patterns of adoption differ by client firm size? We answer this question with the survey. Based on 55 client responses, sixty-nine percent of clients reported that their organizations had already adopted some type of cloud services. Specifically, clients reported that 20% of their organizations already have adopted IaaS in a public cloud, 55% already adopted IaaS in a private cloud, 29% already have adopted PaaS and 55% of their organizations already have adopted SaaS. Are there differences between adopters and non-adopters of cloud services in terms of firm size? To assess this, we compared adopters and non-adopters of four types of cloud computing models on firm size denoted by total number of employees. One-way analysis of variance (ANOVA) tests for log transformed number of employees revealed no significant differences between adopters and non-adopters of IaaS in a public cloud, $F(1, 42) = 1.43$, $p = .24$; IaaS in a private cloud, $F(1, 43) = .62$, $p = .44$; PaaS, $F(1, 39) = .07$, $p = .79$; and SaaS, $F(1, 42) = .10$, $p = .75$. Thus, based on the current sample, ***there appears to be no significant differences between cloud adopters and non-adopters with respect to firm size.***

4. Cloud Drivers

What are the main drivers of cloud computing? Venters and Whitley (2012) conceive of cloud drivers in terms of technical and service “desires”. The technical desires are equivalence, variety, abstraction, and scalability. The service desires are economic efficiency, creativity, and simplicity. The Everest Group survey found, in rank order, the following cloud drivers: (1) reduced time for provisioning application/infrastructure, (1) flexibility, (3) limited in-house technical resources, (4) desire to “variabilize cost”, and (5) reduction in total cost of ownership. Surprisingly, cost reduction was ranked fifth by cloud buyers, but cloud providers viewed it as the top ranked cloud driver. Sultan (2011) describes the main cloud drivers for SMEs as economic (i.e., lower costs, cost avoidance), simplification of software delivery and operation, cost variability (i.e., “pay as you go” scalability), better reliability and security improvement. Pertaining to better reliability and security, cloud providers may have much better security intelligence gathering and data protection capacities than client firms (Sultan 2011). We next examine the cloud drivers from our key informants.

4.1. Key Informant Interviews

The main drivers for three case companies include all those mentioned in the literature (see Table 3). The one additional driver mentioned—business continuity—may be conceived as a driver similar to improving reliability and security as explained below.

Table 3: Cost Drivers		
Dana Foundation	Diesel Direct	Art-World
Cost Reduction	Scalability	Cost Avoidance
Simplicity	Flexibility	Scalability
Business Continuity		

Dana Foundation's Cloud Drivers. Besides cost, the Director of IT cited simplicity of administration and data management and disaster recovery/business continuity as the main drivers of cloud computing for his organization. For example, the Director explained the drivers for moving their email to Office 365: *"Before cloud, we had a single point of failure here at the office during Hurricane Sandy. We have now eliminated that single point of failure by moving it to Office 365."*

Diesel Direct's Cloud Drivers. The Chief Innovation Officer (CIO) said scalability and flexibility were the two main drivers of IaaS adoption. The CIO saw IaaS as the best way to meet increased IT demand caused by Diesel Direct's rapid growth while at the same time adapting to seasonal and monthly fluctuations. The CIO explained, *"We have a business that not only has some industry ups and downs as far as times of year, but volumes of compute hours also fluctuate monthly. That flexibility was a big decision factor. The second thing is as we are growing, the availability of the technical resources to manage the different pieces of IT, whether it is Windows or UNIX infrastructure, web services, SQL services, things of that nature. We are a medium-sized company, so we can't afford to have those skills on staff, but we need those IT skills to be available to us."*

Art-World's Cloud Drivers. According to the Head of Engineering, *"cost avoidance"* was the primary driver of cloud adoption. As a start-up, Art-World had to keep spending as low as possible. Cloud computing was an ideal solution because Art-World only has to pay for IT resources they actually use. Scalability was the second most important driver. The Head of Engineering explains, *"If we have an article about us appear in the New York Times and usage skyrockets, I can request and get more machines in 30 seconds. It's that quick."*

4.2. Survey Responses

Do cloud drivers differ by client firm size? Respondents from client firms were asked to identify top business objectives their organizations seek from cloud computing. Options included, avoid the complexity of managing IT, cost efficiency, data protection, high security, innovation, rapid deployment, reliability, scalability, simplicity, and other. Across all customer responses, three options—cost efficiency (rank 1), rapid deployment (rank 2) and scalability (rank 2)—are the top business objectives.

We examined the top business objectives in relation to firm size. For the customers that indicated firm size ($n=47$), we used a simple median split on number of employees to categorize small and large businesses. We dropped the middle 10% of firms around the median value to ensure a clean separation. For smaller firms, scalability was the most frequently identified as the top business objective, followed by cost efficiency, and rapid deployment. Interestingly, for larger firms, rapid deployment was identified as the top business objective the most often, followed by cost efficiency and scalability. Thus, ***the top business drivers for smaller and***

larger firms were the same—cost efficiency, rapid deployment, and scalability—but sequenced in a different order. We explore this finding in the discussion section.

5. Cloud Barriers

What are the main barriers to cloud services adoption? Everest (2012) found that the rank order of barriers to cloud adoption by client firms were (1) security concerns, (2) integration of cloud solutions, (3) lack of budget for new initiatives, (4) lack of suitable cloud solutions, (5) lack of in-house capability, and (6) fear of vendor lock-in. Sultan (2011) identifies four barriers to cloud adoption in SMEs: data security and privacy, surrendering control, vendor lock-in, and reliability. The cloud barriers for SMEs are very similar to the top two barriers identified by Lacity et al. (2010) in their review of 164 empirical ITO articles published between 1992 and 2010 in 50 journals. They found that (1) concern for security and (2) fear of losing control were negatively and significantly related to outsourcing adoption in five empirical studies. Consistent with both cloud and ITO research, data security was the primary concern expressed by stakeholders in the three SME companies we studied.

5.1. Key Informant Interviews

Among the three cases, data security concerns were expressed by internal stakeholders at the Dana Foundation and Diesel Direct and by external stakeholders at Art-World (see Table 6).

Table 4: Stakeholder Concerns		
Dana Foundation	Diesel Direct	Art-World
Data Security	Data Security	Data Security

Dana Foundation's Security Concerns. At the Dana Foundation, some of the senior managers were concerned about data security in the cloud. The Director of IT explained, *"After all these years, and this is pretty true throughout my career, folks have felt more of a security blanket approach to holding data internally."*

Diesel Direct's Security Concerns. In Summer 2011, Hurricane Irene knocked out power to Diesel Direct's offices, which crashed their email system and halted business. This made the executives aware of the fragility of the in-house infrastructure, but as a fuel company, most of the business executives still were unfamiliar with cloud computing and expressed concerns about cloud security.

Art-World's Security Concerns. Internally, there was very little stakeholder resistance or concern; Art-World was founded by a computer scientist and employs engineers, so they understood and supported cloud provision. The galleries and art collectors showed some concern: *"I would not call it stakeholder resistance, but stakeholder reticence. We have a lot of private data and the surface of exposure is pretty large."*

5.2. Survey Responses

Do security concerns differ by firm size? Clients were asked, “To what degree do you believe security concerns are based on fear or reality?” Participants indicated their responses using a seven-point scale ranging from 1, meaning “Security Concerns are based mostly on fear” to 7, meaning “Security Concerns are based mostly on reality”. The average response (mean = 4.70, s.d. = 1.67) indicated a slight lean towards security concerns as being based on reality. We assessed whether there is any relationship between firm size and respondent’s perceptions regarding security concerns surrounding cloud services. We used a simple linear regression of security concern perceptions on log transformed number of employees (size). The regression model was not statistically significant, $F(1, 45) = .52, p = .47$. The coefficient for firm size ($\beta = -.11, p = .47$) was negative and not significant. Thus, based on the current sample, ***there appears to be no significant relationship between firm size and cloud security concern perceptions.***

6. Stakeholder Buy-In

Stakeholder buy-in is defined as gaining commitment and support from all parties involved in outsourcing related decisions (e.g., Tate and Ellram, 2009). Although Yang and Tate (2011) do not mention any research articles pertaining directly to stakeholder buy-in for cloud services, previous ITO research has identified the importance of stakeholder buy-in to outsourcing success (Lacity et al. 2010). For example, Seddon (2001) found that lack of stakeholder buy-in was one reason for the disappointing financial results from the Australian federal government’s Au\$1.2 billion ITO program. Lacity et al. (2011) found that gaining commitment and support from all parties involved in outsourcing related decisions was positively and significantly associated with better outsourcing outcomes in a number of studies. The key informants explained how they overcame stakeholder concern through practices such as gradual adoption, education, and relationship building.

Dana Foundation’s Stakeholder Buy-in. At the Dana Foundation, some of the senior managers were concerned about data security in the cloud. Stakeholder buy-in was eased by the economic benefits of cloud provision. The Director of IT continued: *“The administrative costs to manage that data internally, to manage the infrastructure, and the capital expense needed to maintain a hosted environment at our own site here, necessitated the look at other options.”* To help assuage stakeholder concerns, the IT department adopted cloud provision gradually. First, the website was moved to the public cloud, then hosted resources, then email. According to the Director of IT, email has been a “smashing success” and has paved the way for moving more mission critical applications, like contact and grant administration, to a SaaS model. The latter has the greatest effect on end-users. *“Any kind of change to the end user is going to be a little traumatic. However, the pain and the cost levels have gotten to a point where change is definitely in order. That’s the fulcrum point that has moved us over the tipping point.”*

Diesel Direct's Stakeholder Buy-in. The current CEO and current CIO were hired to help transform the company, in part by exploiting more IT-enabled solutions. The new CEO of Diesel Direct actually built an IaaS business for a large global provider prior to coming to this company. The CIO used to work for him. Both the CEO and CIO understood that business executives are concerned about the security of the cloud, but based on their prior experience, they were able to alleviate security concerns, primarily through education and relationship building. The CIO said, *"I'm personally very comfortable with qualified third parties having access to my data system. It was a little easier for me coming from my background to be able to not only explain to the business leaders how their data would be available and secure but also from my own standpoint knowing that I could sleep at night knowing my vendors were taking care of me."* As far as education, the CIO explained the difference between seeing a server in a resident server room versus monitoring the server housed in a class A-rated data center. *"We worked hard to build trust because we were new. I was here for a month plus before we started the cloud project. So, 45 days is not a lot of time for someone to trust you. So, to show them that I knew what I was doing and that they could trust me, I was already working towards helping them."* For example, the CIO tweaked the current systems to make it more secure and to reduce downtime. The CIO continued, *"So, building that trust with getting those quick wins was a big help in building credibility and moving us towards the cloud."*

Art-World's Stakeholder Buy-in. As mentioned above, some of the galleries and art collectors showed some concern about data security. Art-World's Head of Engineering explained to stakeholders how client contact information is accessed and protected. This education helped to get buy-in. He said, *"Art-World's partners have limited technology exposure and are particularly sensitive to data protection around client names, availability of merchandise and the pricing of goods. We have spent a lot of time and money on either hiring employees that are already familiar with these concerns because of their past employment or educating new employees in this area. While we have gone out of our way to help clients understand the technical implementation of data protection, we believe that "trust" is not a technology issue."*

7. Provider Selection

How do SME clients select their cloud providers? According to the 2012 Everest survey, clients select cloud providers based on (1) security of the offering, (2) contract terms and SLAs, (3) reputation and tenure of the provider, (4) client referrals, (5) physical location of the provider's facilities, and (6) price. As far as the selection process, provider selection for the outsourcing of complex ITO services often involves long RFP, procurement, and negotiation processes (IAOP 2010; Willcocks et al. 2010). In contrast, ***provider selection for cloud services is a faster process, according to key informants.*** Below, the key informants describe how they selected their providers or why they continue with existing cloud providers.

Dana Foundation's Provider Selection. As far as selecting their main cloud provider, the key informants from the Dana Foundation were not privy to the initial provider selection, but the four-

year relationship between the Dana Foundation and its IaaS provider was recently extended in 2013 for two more years. The Director of IT did not seriously consider switching providers when the contract expired. He said, *"We were more than happy to continue with the incumbent relationship. We were so happy with the level of service and the relationship as well. To me, any cost differences far outweighed the efforts needed to move to an unknown provider."*

Diesel Direct's Cloud Provider. The CIO explained how Diesel Direct selected its largest cloud provider. The CIO met face-to-face with three providers. The CIO chose not to do a formal RFP based on his prior experience. He said, *"I've spent almost all my life in the outsourcing business; I'm used to proposing and responding to long proposals and filling in spreadsheets with the yellow tabs and all. From my perspective, it's better to sit down and discuss and get a good idea of who you want to work with first before you spend all that time on an RFP."*

Art-World's Cloud Provider. Art-World has been in a relationship with its primary cloud provider since launch in 2011. After considering several other providers, including the option of contracting directly with Amazon Web Services, Art-World selected its cloud provider based on referrals from and visits with other clients. The Head of Engineering said, *"We've asked 10 other startups about their cloud infrastructure and got seven recommendations for our cloud provider, even though four out of these seven no longer use this provider as they grew in team size and traffic. This was a straightforward decision."*

8. Contractual Governance

What types of contracts govern relationships with cloud providers? In the context of cloud services, there has been some work on contractual governance, primarily regarding optimal mathematical pricing and SLA models (e.g., Carlsson and Fullér 2013; Gwak and Sim 2013; Li 2011; Yeo et al. 2009). For complex ITO services like software development, software maintenance, data center operations, and telecommunications/networking, many academics have studied contractual governance. Substantial evidence from this literature finds that (a) more detailed contracts, (b) shorter-term contracts and (c) higher-dollar valued contracts are significantly associated with positive ITO outcomes (Lacity et al. 2010). Detailed contracts that defined the scope of services, prices, service levels, and responsibilities of both parties and prescribed how parties would adapt to changes in character, volume, or market best practices had better outsourcing outcomes than contracts with fewer details (e.g., Poppo and Zenger 2002). Shorter-term ITO contracts in the three-to-five-year range experienced successful ITO outcomes more frequently than contracts with greater than five years duration (Currie, 1998; Baldwin et al., 2001.) Higher-valued contracts perform better than lesser-valued contracts because the transaction costs associated with outsourcing are spread over a greater volume of work (Rottman and Lacity 2008). Best practices from complex ITO services—detailed contracts, three-to-five year contracts, and high valued contracts—did not apply to cloud services outsourcing in the SME cases we studied (see Table 5).

Table 5: Contractual Governance			
	Dana Foundation	Diesel Direct	Art-World
Contract Duration	3 years	3 years	No contract
Pricing	Unit Pricing	Unit Pricing & Management Fees	Unit Pricing & Fees for Add-ons
SLA	Availability	Availability	Availability
	Response Time to Queries	Response Time to Requests	
Invoicing	Monthly	Monthly	Monthly

Dana Foundation: Contractual Governance. The Director of IT describes the scope of the contract as *“a boiler plate IaaS hosting contract.”* The contract is priced by compute resources and invoiced monthly. For example, the contract specifies the amount of disk CPU RAM that the provider hosts in a virtualized environment for the Dana Foundation. The provider controls the virtualized infrastructure, including access to that environment for administration purposes. The provider hosts everything in their tier-one data centers which, for this client, are in Boston and Houston. Their sites are highly malleable because the provider can shift resources between sites, depending on continuity requirements. The SLAs address availability of services and response time to client requests of between 8 and 24 hours. The SVP from the provider added, *“We provide SLAs around the availability of the infrastructure from a network perspective, from a storage perspective, and from a VMware host perspective. We also provide a performance SLA on the actual disc, which is definitely unique and forward-looking. A lot of organizations are not doing this yet, and we’ve been doing it for years.”* The provider measures client satisfaction at a relationship-level monthly and measures client satisfaction for the handling of every service request.

Diesel Direct: Contractual Governance. Blue-Color signed a three year contract in October 2011 before going live January 2012. The contract for CPU and storage is priced on a baseline volume of service, with extra charges if volumes exceed a baseline threshold. The cloud provider allocates additional resources automatically based on a consumption model. There is a cap on extra resources that requires the CIO’s permission. In addition to resource pricing, the contract includes small monthly fees for management of SQL, the firewall, networking, and operating systems. For Diesel Direct, and SLA for availability was their top priority. Their billings systems must always be up. The CIO explained, *“There is really just one extremely large risk that we have in this particular industry. And that is: every night, our trucks go to terminals and pick up 3 to 5,000 gallons worth of fuel and take them to customers and load them into their trucks or tanks. Which means that we are buying a million gallons diesel a week; We have to pay for a million gallons of diesel a week. In order to ensure that all of that works, the whole system has to be available 24/7 so we can invoice customers.”* The provider replicates their systems and servers at two data centers and guaranteed 99.95% availability. The first thirteen months into the contract, the service has been available 100% of the time. The contract includes an SLA for time to implement new requests submitted through a portal.

Art-World: Contractual Governance. There is no long term contract; Art-World pays for resources monthly. The provider invoices for the number of hours of virtual machines used and for hours of use for each add-on. The cloud provider has SLAs for production and development environments, but the Head of Engineering is not too concerned: *“In the real world, my software will fail more often than their infrastructure. So far, the uptime and response time has been pretty good, but if it ever degraded, we could always switch providers.”*

9. Relational Governance

Relational governance comprises the informal rules that manage client-provider relationships (Macneil 1980). In the academic research on complex ITO services, relational governance such as effective knowledge sharing, communication, trust, and viewing the provider as a strategic partner was significantly and positively correlated with outsourcing outcomes (e.g., Kishore et al. 2003; Lacity et al. 2010; Oshri et al. 2008; Sabherwal 1999; Saunders et al. 1997). In the review of the cloud computing research, Yang and Tate (2012) did not find any articles on relational governance. Perhaps relational governance is less important in the context of cloud services outsourcing. From the key informant interviews, cloud services do not require as much client-provider interaction (see Table 6); Cloud services are more standardized and work is typically coordinated using portals, as described by our key informants below.

The Dana Foundation and Diesel Direct have scheduled monthly meetings with their primary cloud service provider and initiate ad hoc meetings as circumstances dictate. Cloud services are monitored and adjusted as needed using a portal. In addition, key informants also spoke of trusting their providers (Dana Foundation), viewing them as partners (Diesel Direct), and sharing interests with them outside the cloud relationship (Art-World).

Table 6: Relational Governance			
	Dana Foundation	Diesel Direct	Art-World
Scheduled Meetings	Monthly	Monthly	None
Ad hoc meetings	Rarely	Frequent	Rarely
Monitoring	Portal	Portal	Portal
Softer Issues	Trust	Partnership View	Shared Interests

Dana Foundation: Relational Governance. The Director of IT has monthly meetings with the Account Manager from the IaaS provider. The partners discuss the invoice, review the inventory of computer resources, and check that everything is sized properly and monitored properly. In addition to scheduled monthly meetings, the Director of IT has full monitoring capabilities, so he can request ad hoc meetings to ask questions about how a resource is performing, either poorly or out of the scope. However, the Director of IT said he has only contacted the provider one time outside the monthly meetings, and that was to discuss preparations for Hurricane Sandy. He said, *“We just wanted to know what their contingency plan was because the hurricane’s path was basically going right towards the Boston data center.”*

They assured me that if needed, they could transfer their resources to the Houston facility.” There was no downtime during or after the hurricane. The Director of IT trusts the provider based on a proven track record.

Diesel Direct: Relational Governance. As a previous provider, Diesel Direct’s CIO places a great emphasis on treating the cloud provider as a strategic partner. The CIO, for example, did not seek any penalty clauses for non-performance. Instead, the parties worked together to decide how to best ensure availability through the resident duplication in two data centers. The CIO said, *“We both made the investment in ensuring availability. We both felt that we are both making the right decisions rather than looking at it as strictly a vendor-customer relationship with those types of penalties.”* The provider’s account manager meets monthly with Diesel Direct to review the invoice and report on any incidents. Relational governance is facilitated by a portal where the CIO or his staff can monitor performance, submit requests, or report incidents. The contract also specifies a conflict resolution escalation process, but the CIO reported that nothing has ever escalated beyond him. He said, *“I will tell you that nothing has gotten any further than me. They have handled everything that we have had any issues with. They aren’t perfect...There are some things that they have had hiccups on in the past, but we have always been able to work with them.”* The technical staff at Diesel Direct and its cloud provider also developed some close relationships. For example, someone from the CIO’s staff can contact the provider’s SQL expert to ask about a slow database. *“We can give them a call and talk to them like as if they were our own employees.”*

ART-World: Relational Governance. Art-World primarily interacts with its cloud provider online; It can scale resources up or down through the portal and submit ticketing requests online. The main personal contact is with a program manager to make suggestions for new features and enhancements to the services. *“We have very good working relationship with the people actually building their software.”* The cloud provider reacted early on to implement one of the biggest features requested by Art-World. In addition, Art-World developers work on some open source projects with the cloud provider.

10. Provider Performance

How do SME clients rate provider performance for cloud services? We did not find specific research that answered this question; most research measures business outcomes of cloud services (see Section 10), so we turn to the data from our key informants and survey to answer this question.

10.1. Key Informant Interviews

The key client informants were asked to rate the level of satisfaction with the overall performance of their cloud provider using a seven point Likert scale, with 1 indicating “completely dissatisfied” and a 7 indicating “completely satisfied” (see Table 7). We also asked

about the provider's level of service quality using a 9 point Likert Scale with a 1 indicating "inferior performance" and a 9 indicating "superior performance". Informants rated overall **reliability of service** (the ability of the provider to perform the promised service in a dependable and accurate manner; the service is performed correctly on the first occasion; the accounting is correct, records are up to date and schedules are kept), overall provider **responsiveness of service** (the readiness and willingness of the provider to respond to client requests promptly), overall **provider assurance** (the provider is knowledgeable and qualified and conveys trust and confidence), and overall **provider empathy** (the provider shows genuine care and concern for your organization) (Parasuraman et al. 1985; Jiang et al. 2002). Clearly, clients from all three cases are highly satisfied with the performance and quality of service received from their cloud providers.

Table 7: Satisfaction with Provider Performance				
	Scale	Dana Foundation	Diesel Direct	Art-World
Overall satisfaction with cloud provider	1-7	7	5	6
Overall performance of the cloud provider	1-9	9	8	6
Overall reliability of service	1-9	9	9	9
Overall provider responsiveness	1-9	8	7	6
Overall provider assurance	1-9	9	7	8
Overall provider empathy	1-9	8	8	7

10.2. Survey Response

Respondents representing client firms were requested to indicate their organization's satisfaction with the overall performance of their largest cloud service provider. Responses were anchored on a 7-point Likert scale where a 1 indicates "Completely Dissatisfied" and a 7 indicates "Completely Satisfied". The average client response was 4.94, indicating clients are somewhat satisfied with the overall performance of their largest cloud provider. We further assessed whether there is any relationship between firm size and satisfaction with largest cloud provider using a simple linear regression of satisfaction on log transformed number of employees (size). The model was not significant, $F(1, 45) = .41$, $p = .52$. The coefficient for firm size ($\beta = .09$, $p = .52$) was positive but not significant. Thus, based on the current sample, ***we did not observe any significant relationship between firm size and satisfaction with largest cloud provider.***

11. Business Outcomes

What business value actually gets delivered from the outsourcing of cloud services? In the review of the cloud computing literature, Yang and Tate (2012) found 30 articles on cloud performance, but these articles all seemed to address *technical* performance (e.g., Lin and Chang 2013). For example, researchers wrote algorithms to detect bottlenecks, estimate node

failure, and improve load balancing. As far as business outcomes from cloud services, the 2012 Everest survey found that 64% of respondents achieved their targeted cost savings, 82% achieved their objectives for infrastructure flexibility, and 71% met their objectives for quicker time to market. Furthermore, 67% of respondents met their objectives for high customer satisfaction. The key informants for this research all report significant business value from cloud services.

11.1. Key Informant Interviews

The key client informants were asked to rate the level of satisfaction with the overall business value the client organization is getting from cloud services using a seven point Likert scale, with 1 indicating “completely dissatisfied” and a 7 indicating “completely satisfied” (see Table 9). Clients from all three cases indicated they were “completely satisfied”. Each informant also described the business outcomes from cloud services, which include cost savings (both significant and minor), better service, better work-life balance for in-house IT staff, scalability, flexibility, and simplicity.

Table 9: Business Value Delivered			
Scale	Dana Foundation	Diesel Direct	Art-World
Overall satisfaction with business value of cloud services(7 point scale)	7	7	7
Main business value	<ul style="list-style-type: none"> Significant Cost Savings 	<ul style="list-style-type: none"> Better service Improved Work-Life Balance Minor Cost Savings Flexibility Scalability 	<ul style="list-style-type: none"> Significant Cost Savings Scalability Flexibility Simplicity Refocus in-house staff

Dana Foundation Business Outcomes: Overall, The Director of IT estimates that moving to IaaS, SaaS, and PaaS in 2013, will produce an overall savings of 85% to 90%. As far as IaaS, the adoption of cloud computing has not reduced the number of internal IT employees, but the savings from replacing the outsourcing provider that previously handled technical support with cloud provision have been more than 65%, worth “*hundreds of thousands of dollars*” according to the IT Director. For SaaS, he also expects significant savings: “*Eighty percent of our process is paper and all of the associated costs associated with managing that paper is tremendous. As we move our grants management system to Salesforce.com, that will save money through improvement of process and the elimination of paper. I fully expect low to mid six figures savings just from that alone.*”

Diesel Direct: Business Outcomes. Diesel Direct was able to achieve minor cost savings by cancelling a contract for database and desktop maintenance with a contracting firm. The in-house employees took over desktop support since they had time freed up as a consequence of

IaaS. The real value of IaaS comes from the superior services; The databases and servers are resident in two of the IaaS provider's data centers, one in Virginia and one in California, and they are 100% available, which provides Diesel Direct with data redundancy and disaster recovery that they did not have with in-house provision. Additionally, the in-house staff no longer has to work nights to run some of the processes or has to be on call to monitor servers. The CIO said of business outcomes, *"Again, we were not looking at great cost savings but looking to grow the business and grow it without killing the staff and killing end user and customer satisfaction. The value is in the flexibility of being able to provide that fast performance of the system when we need it and not struggle as we did before. Everybody knew: Mondays are going to be slow; that type of thing doesn't happen anymore. "We can't get that report for you because we are running another process." So that type of value and customer satisfaction has been very large."*

Art-World: Business Outcomes. The Head of Engineering is very pleased with the value delivered from cloud provision. Pertaining to costs, he estimates a 30% to 40% reduction in server costs using cloud compared to buying his own servers and hiring more staff. He said, however, that as organizations get bigger, the costs between rent and buy start to even out. The sustainable advantages are scalability and speed of deployment. Simplicity is another benefit: *"I don't have to deal with switchers and routers...[the cloud provider] provides me with virtually infinite bandwidth and machines. This allows me to spend more of my money on developers instead of infrastructure people."*

11.2. Survey Responses

We asked clients to indicate their level of satisfaction with the business value their organizations are getting from cloud services using a seven point Likert Scale, with a 1 indicating "completely dissatisfied" and a 7 indicating "completely satisfied". The average client response was 4.90, indicating clients are *somewhat satisfied* with the business value from current cloud services. Do average client responses vary by size of client firm?

We further assessed whether there is any relationship between firm size and satisfaction with business value of cloud services using a simple linear regression of satisfaction on log transformed number of employees (size). The Pearson correlation between size and satisfaction with value of cloud services was .31 ($p=.08$). The regression model was not statistically significant at $\alpha = .05$, $F(1, 45) = 3.31$, $p=.08$. The coefficient for firm size ($\beta = .26$, $p = .08$) was positive and not significant at $\alpha = .05$. Based on this data, we find ***no strong relationship between client firm size and satisfaction with cloud services business value.***

12. Discussion

"Cloud computing is really a no-brainer for any start-up because it allows you to test your business plan very quickly for little money. Every start-up, or even a

*division within a company that has an idea for something new, should be figuring out how to use cloud computing in its plan.*¹⁰-- Brad Jefferson, CEO, Animoto.

We examined cloud adoption, cloud drivers, cloud barriers, stakeholder buy-in, provider selection, contractual governance, relational governance, provider performance, and business value of cloud services outsourcing in SME clients using key informants and a survey. A summary and comparison of findings is presented in Table 9. The key informant data provides evidence of the value that cloud services outsourcing can bring to SMEs. The Dana Foundation, Diesel Direct, and Art-World all described high levels of satisfaction with the business value of cloud services and with cloud provider performance. For these SME client firms, the processes for provider selection, stakeholder buy-in, contractual governance, and relational governance were less complex compared to processes involving complex ITO services like applications development (Lacity et al. 2010).

Table 9: Summary of Findings			
Section	Key Informant Interviews	Cloud Survey (n=55)	Equalizer Effect? Firm Size
3. Cloud Adoption	Significant adoption	20% IaaS (public) 55% IaaS (private) 29% PaaS 55% SaaS	Yes, firm size not related to adoption
4. Cloud Drivers	<ul style="list-style-type: none"> • Cost Reduction • Scalability • Simplicity • Business Continuity • Flexibility <i>(not ranked)</i>	1. Cost Efficiency 2. Rapid Deployment 2. Scalability	Yes; Firm size does not matter in terms of top three drivers; No, Firm size matters in terms of sequence of top three drivers
5. Cloud Barriers	1. Security Concern	1. Security Concern	Yes, security concern is not related to firm size
6. Stakeholder Buy-in	Process of education, trust building, and gradual adoption.	n/a	n/a
7. Provider Selection	Less formal process compared to complex ITO services	n/a	n/a
8. Contractual Governance	<ul style="list-style-type: none"> • Off the Shelf • Monthly to 3 year • Unit pricing & add-on fees • Minimal # of SLAs 	n/a	n/a
9. Relational Governance	Meet monthly Monitor/Control by portal	n/a	n/a
10. Provider Performance	High Satisfaction High Service Quality	Somewhat Satisfied	Yes, provider performance is not related to firm size
11. Business Value	Highest Satisfaction	Somewhat Satisfied	Yes, business value is not related to firm size

¹⁰ From "15 Memorable Cloud Computing Quotes", <http://www.techno-pulse.com/2011/02/memorable-cloud-computing-quotes.html>

We turn to the survey data to answer the question “Does size of client firm affect cloud adoption, perceptions and outcomes?” The survey data found no client firm size differences in cloud services adoption, security concerns, satisfaction with business value from cloud services or with provider performance. The top three drivers were scalability, rapid deployment, and cost efficiency for firms of all sizes, although there was a difference in sequence based on firm size. Based on this data set, ***we find evidence that cloud services outsourcing may indeed be the great IT equalizer for SMEs.*** In this section, we provide several interpretations for this apparent “equalizer” effect.

12.1. Firm Size and Cloud Adoption Costs

The cloud seems to enable SMEs to harness the same infrastructure and software as large client firms without the prohibitive upfront capital costs of buying servers and paying hefty software licensing fees. SMEs find additional benefits from outsourcing cloud services including allowing SMEs to avoid capital and staff outlay during start-up or early stages of growth and accessing superior provider skills that could only be retained in-house at a great cost. All of these factors level the playing field by giving SMEs the same access to enterprise technologies as large firms (Ashford 2008; Ghazal 2001).

Transaction Cost Economics has been widely appropriated to study outsourcing of IT services (Karimi-Alagheband et al. 2011) and may help interpret the equalizer effect. From a Transaction Cost Economics lens, cloud computing offers relatively low transaction costs—the costs incurred in searching, creating, negotiating, monitoring, and enforcing a service contract between buyers and suppliers (Williamson 1991). The threat of opportunism is low because asset specificity is low and the number of cloud providers are many, meaning contracting for cloud services and switching costs for client firms are much lower compared to ITO for complex services like applications development. When transaction costs are low, volumes do not have to be high to prevent transaction costs from swallowing production cost advantages (Lacity and Rottman 2008). Thus, smaller firms may have equal advantage as larger firms for cloud services outsourcing.

12.2. Firm Size and Cloud Security

The survey found no significant relationship between firm size and security concern perceptions, but the interviews did reveal that security may be better with a cloud provider than internal provision for SMEs. For many SMEs, cloud providers have superior security and data protection capabilities. The Senior Vice President for iLand explained: *“SME and mid-market organizations are surprised when they look at how rigorous we have to be...Not only do we have to be secure, we have to be able to prove it.”* It is easy to understand how cloud provisioning could be safer than in-house IT for SMEs, but what about for large clients? Is it safe? Interviews with providers explained how large firms can safely build hybrid clouds.

Many large organizations have already virtualized their IT environments using VMware. The 2012 Everest survey, for example, found that 47% of respondents use VMWare for technology virtualization. Large clients often seek hybrid clouds where the cloud provider creates a highly secure portable platform with integration compatibility. The Senior VP of iLand explained, *“If you’ve deployed VMware in your local environment, you have a secure way of leveraging our infrastructure so you can move them to our environment. You can move them back if you like. The key here is that you have visibility and you can manipulate your cloud infrastructure directly from the same administrative console that you use locally in your own data center.”*

Benedict (2013) notes that organizations of all sizes have to consider the impact of increased security on cloud performance response time. Encryption and decryption mechanisms slow response time. For the SMEs in our study, the slightly lower response time was not a major issue. One informant warned potential cloud customers: *“Have careful measurements of what you expect the system to deliver and see if it matters to you. It doesn’t really matter for me if the data throughput is terrible. It’s not terrible, but even if it was, I don’t have a rate for which it matters. But for some companies, this is something that is really important to worry about: performance.”*

12.3. Firm Size and Provider Relationships

Will Providers pay enough attention to SMEs? From Resource Dependence Theory (Pfeffer and Salancik 1978), service providers are likely to be incented to allocate their best resources and full attention to their largest revenue sources. One may reasonably assume large firms, on average, may pay larger invoices for cloud services. We asked the key informants whether their cloud providers paid enough attention to them. Overall, key informants said yes, although one client had to intervene to increase the provider’s attention.

According to the Director of IT at the Dana Foundation, all of his cloud providers provide excellent service, even though the Dana Foundation is a small organization. For example, when the Dana Foundation moved from Microsoft Exchange to Office 365, the Director of IT said, *“Microsoft was more than helpful examining our current email environment and showing us where they could reduce costs from a subscription perspective...Although we are very small, I think they were looking at the big picture. They saw the model that we aspired to. We are virtualizing this office.”*

Diesel Direct is a smaller-sized client for its cloud provider. At the beginning of the relationship, Diesel Direct’s CIO felt he was not getting the same priority as a large customer: *“We were getting a memo at 3:00 telling us that we had an outing at 1:00 and now it is fixed. I wanted something at 1:02 that said, ‘we’ve got an issue, we’re looking it,’”* After expressing his concern to the provider, the provider changed their notification process to include contact lists for all their clients, not just the large ones. The CIO concluded, *“I was very happy that they took that into consideration and implemented this not only for us but their other accounts so that we could understand what was going on within the environment. I would say that was handled really well.”*

12.4. Stealth Adoption by Strategic Business Units?

In the survey, larger firms identified rapid deployment as the top business objective. We suspect rapid deployment may be driven by Strategic Business Units (SBUs) within large firms for the purpose of bypassing cumbersome centralized IT procurement policies. Accenture's 2013 cloud computing survey (Nieves 2013) reported that 78% of cloud procurement comes from Strategic Business Units (SBUs) and only 28% are from centralized IT functions. Zainuddin (2012) presented a paper on this phenomenon called "Secretly SaaSing—Stealth Adoption of SaaS from the Embedded Perspective". The author defines stealth adoption as "SaaS is adopted at the operational level without the knowledge of centralized IT". Strategic business units may procure on their own to quickly meet business needs and to avoid the slow processes of centralized request systems. One key informant from a cloud provider described this phenomenon to us. He said large organizations have tremendous investments in IT resources and governance processes, which can delay deployment. At one of his large client companies, for example, an SBU's request for additional servers takes more than three months internally. Because the process can be long, SBUs are incented to inflate their requests internally to avoid having to revisit the process if additional resources are needed. The Senior Vice President for iLand explained, *"SBUs would rather overprovision so they have some buffer space."* For SBUs, cloud provision happens much quicker. However, as multiple, ad hoc cloud adoptions occur across SBUs, *"The next thing you know you have other problems. You have this sprawl and you need to figure out how to manage it."*

Based on similar decentralized adoption patterns of end-user computing, client-server technology, and offshore outsourcing, it can be expected that centralized IT functions may eventually assume governance over SBU cloud provision. In offshore outsourcing of applications development, for example, strategic business units from a Fortune 100 company had 50 engagements with Indian providers, some of which had vastly different prices and service guarantees with the same Indian provider. The centralized CIO eventually took control of these relationships and reduced the number of contracts to 15, yielding cost savings from lower prices and lower transaction costs as well standardizing processes (Lacity and Rottman 2008).

12.5. Limitations

This research has a number of limitations. Key interviews have two main drawbacks, informant bias and random error (Kumar et al. 1993). Researchers have suggested that multiple informants per site increase the reliability and validity of findings (Seidler 1974). For two of the cases, we have more than one key informant. For Art-World, we have only one key informant. The client tried to find someone for us to interview at the provider firm, but the provider was non-responsive.

The survey also has a number of limitations in that we were severely limited in the number of questions we were allowed to ask; Participants had to be able to answer the questions in five minutes, thus we could not measure constructs with multiple item scales. We argue the benefits of accessing this elite crowd of outsourcing customers and of verifying respondent identities outweigh the limitations.

13. Conclusion

Based on three case studies and a survey, the evidence supports the conjecture that cloud services outsourcing is an IT equalizer for SMEs. From the case studies, cloud services outsourcing enabled the SMEs to harness the same infrastructure and software as large client firms without the prohibitive upfront capital costs of buying servers, paying hefty software licensing fees, or hiring additional IT staff during start-up or early stages of growth. The survey found that client firm size was not significantly related to cloud adoption, cloud drivers, security concerns, or satisfaction with cloud provider performance or with business value. Besides alleviating some of the problems particular to an SME, cloud services outsourcing may also address particular problems of large companies, such as cumbersome centralized IT procurement policies.

The conjecture and evidence for cloud services outsourcing as the great equalizer for SMEs must be further tested. It is possible cloud “enthusiasm” may be overly-optimistic and might even be considered a management fad. The history of IT is wrought with “silver bullet” promises, like the promises of the paperless office or automatic code generators replacing programmers (Nelson 2007); One must be wary that cloud services might be the latest management fad fueled by the trade press, providers, and advisory firms. For example, Gartner predicts cloud computing will be a \$148.8 billion market by 2014—a prediction challenged by recent research. Willcocks et al. (2012), for example, found that IT executives project longer time horizons for cloud adoption because of the difficulties of transition and oversight required to manage detailed relationships with internal and external stakeholders. We do note that many management fads become sound management practices (Spell 1999; Towill 2006), and one role of academic scholarship is to describe management practice more objectively than trade press, provider, and advisory firms.

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