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Abstract

There is considerable debate in the IS research literature about the nature of cloud computing. Whereas some researchers suggest that cloud computing is a paradigm shift that is changing the IT industry, others argue that cloud computing is just another form of IT outsourcing. Based on a review of the IS research and practitioner literature, this paper takes a middle position. We believe that while cloud computing represents a new delivery model of IT resources, there are lessons to be learnt from earlier studies in outsourcing. Hence this paper focuses on one issue in particular: the relationship between the client and vendor. Drawing from existing studies in IT outsourcing, this paper seeks to identify those factors related to client-vendor relationships that might be relevant in the context of cloud computing. We propose four factors as being particularly relevant for cloud computing: commitment, cooperation, cultural compatibility and trust.

Keywords: Cloud Computing, IT Outsourcing, Client-vendor Relationship, Social Exchange Theory, Relational Exchange Theory.

1 INTRODUCTION

Cloud computing represents state-of-the-art technologies that deliver IT services via the Internet. Gartner (2013) predicts that 50% of large organizations will have at least part of their IT operations in the cloud by 2017. The market for public cloud services is predicted to grow to US$160 billion in 2020 (Choudhary and Vithayathil 2013).

Whereas some IS researchers suggest that cloud computing is a disruptive technology that is significantly changing the face of IT industry (Marston et al. 2011), others view cloud computing as an evolution, or as a new form of IT outsourcing (Böhm et al. 2011; Chow et al. 2009; Motahari-Nezhad et al. 2009).

This paper takes a middle position. While we agree that cloud computing represents a new delivery model of IT resources, we suggest that there are lessons to be learnt from earlier studies in outsourcing. Hence this paper focuses on one issue in particular: the relationship between the client and vendor. Studies in IT outsourcing have shown that the relationship between the client and the vendor is one of the most important factors for the success of IT outsourcing arrangements.

We define outsourcing as the acquisition of products or services from a third party (Grover et al. 1994). IT outsourcing represents a notable contribution by external organizations in the physical or human resources associated with both the tangible equipment, staff and applications and the intangible organization, methods and policies for maintaining IT operations, partly or in full, in the user organization (Loh and Venkatraman 1992). We define cloud computing as an IT sourcing model that enables on-demand, ubiquitous access to a shared pool of computing resources, including servers, applications, and IT services. Computing resources can be provisioned elastically and rapidly with minimal management effort (Mell and Grance 2011).

One obvious similarity between outsourcing and cloud computing is that both involve the provision of IT services from another company as opposed to the provision of these services in-house. The main difference between cloud computing and traditional IT outsourcing is perhaps the more flexible deployment of virtual and asset-free IT services (Böhm et al. 2011). Cloud services are designed by the vendors to be deployed rapidly and the cost of upfront capital investment is transferred from the client to the vendor (Armbrust et al. 2010).

Numerous studies have found that the success of an outsourcing arrangement depends greatly on the success of the client-vendor relationship (Blumenberg et al. 2008; Goles and Chin 2005; Grover et al. 1996; Kern 1997; Kishore et al. 2003; Klepper 1993; Lee 2001; Lee and Kim 1999; Qi and Chau 2012; Swar et al. 2012; Webb and Laborde 2005). The outsourcing literature indicates that the basis for a successful outsourcing client-vendor relationship begins with the formal contract (Fitzgerald and Willcocks 1994; Qi and Chau 2012; Saunders et al. 1997; Webb and Laborde 2005). On top of the contract, a good relationship is necessary since a contract might not be flexible (Fitzgerald and Willcocks 1994; Qi and Chau 2012). Maintaining a good client-vendor relationship helps to overcome the unpleasant legal wrangles associated with formal contracts (Fitzgerald and Willcocks 1994). Although formal control dominates the portfolio of control in prior research (Choudhury and Sabherwal 2003; Chua et al. 2012b), the need for informal control has also been highlighted in the literature (Chua et al. 2012b; Goo et al. 2009; Gopal and Gosain 2010; Kirsch 2004; Kohli and Kettinger 2004; Tiwana and Keil 2009). Hence both informal control and relational governance are critical to the success of IT outsourcing.

Given that cloud computing and IT outsourcing share some common characteristics, this paper aims to explore the client-vendor relationships in cloud computing. To the best of our knowledge, very few (if any) studies have been conducted on the client-vendor relationship in the context of cloud computing. Hence this paper aims to fill this gap or at least make a start to do so.

Based on a review of the IS research literature, we categorise the factors in IT outsourcing relationships into four relational constructs. These relational constructs are commitment, cooperation,

culture compatibility and trust. Using these four relational constructs, we further review the cloud computing literature to explore the implications of these relational constructs in the context of cloud computing. We propose four propositions based on the four relational constructs.

This paper is organized as follows. We begin by explaining the theoretical foundation. We then present the conceptual framework. This is followed by the discussion and conclusions section where we discuss the four relational constructs and their implications in cloud computing.

2 THEORETICAL FOUNDATION

The IT outsourcing relationship has been explored using various theories. Two of the most common are social exchange theory (Kern and Willcocks 2002; Lee and Kim 1999; Mao et al. 2008) and relational exchange theory (Kern and Blois 2002; Olsson et al. 2008). Many of the social exchange theory propositions are well suited for analysing the inter-organizational exchange relationship (Son et al. 2005). Relational exchange theory is also considered appropriate to examine client-vendor relationships as it looks at the factors that influence the quality of the relationship factors between the parties in an exchange relationship (Swar et al. 2012). Therefore, this paper uses these two theories as lenses to explore client-vendor relationships in outsourcing and cloud computing.

The underlying assumption of social exchange theory is that parties enter into and maintain relationships with each other, expecting that such behaviour will be rewarding (Lambe et al. 2001). Social exchange theory emphasizes the concept of a longitudinal exchange relation between parties, focusing on the social process of give-and-take in relations, with the aim to understand the behaviour of each party contributing to the exchange (Kern 1997). Trust and commitment are viewed as central elements in social exchange theory (Lambe et al. 2001; Qi and Chau 2012). Further, social exchange theory assumes the cooperative intention of both parties and such cooperation is a key attribute of social exchange theory (Das and Teng 2002; Lin et al. 2004).

Relational exchange theory is based on the concept that parties in an exchange are in mutual agreement that the resulting value of the exchange is greater than the value that can be obtained from other forms of exchange, or from exchange with a different partner (Goles and Chin 2005). Since both parties believe in the value created from the exchange, this motivates them to consider the relationship important, and to dedicate resources towards preserving and enhancing the relationship (Anderson and Narus 1990; Dwyer et al. 1987; Lambe et al. 2001; Nevin 1995).

Relational exchange theory holds the view that contracts are unable to cover all possible contingencies that might arise during the life of the contract (McNeil 1980). Therefore, the key to determine how effective a contract is depends on the relational norms established between the two parties (Artz and Brush 2000). These relational norms are defined as a higher order construct, which determines the quality of a relationship (Kern and Blois 2002). Goles and Chin (2005) suggest that the most important relational norms are interdependence, consensus, commitment, cultural compatibility, flexibility, communication, coordination, conflict resolution and integration (Goles and Chin 2005).

3 CONCEPTUAL FRAMEWORK

Using both social exchange theory and relational exchange theory as lenses, we explore the client-vendor relationship in IT outsourcing. Through a review of previous research, ten articles were selected to form the conceptual framework for this paper. These papers were selected based on their relevance to the IT outsourcing relationship, the quality of their research, and their influence in the IS field as measured by their high citations. Table 1 lists the ten articles selected, while Table 2 outlines the relational factors identified in the selected papers.

(1)	Goo et al. (2009)	(6)	Lee and Kim (1999)
(2)	Goles and Chin (2005)	(7)	Mao et al. (2008)

(3)	Henderson (1990)	(8)	Olsson et al. (2008)
(4)	Kern (1997)	(9)	Qi and Chau (2012)
(5)	Klepper (1993)	(10)	Swar et al. (2012)

Table 1. Paper Selection.

Factors	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	Frequency
Adaptability							√				(1) Low
Attitudes & Assumptions			√								(1) Low
Commitment	√		√	√		√		√	√	√	(7) High
Communication		√		√		√	√	√	√		(6) High
Confidentiality Management										√	(1) Low
Conflict Resolution	√	√			√	√		√		√	(6) High
Consensus		√						√			(2) Low
Control							√				(1) Low
Cooperation		√		√	√			√		√	(5) High
Coordination		√				√		√			(3) Low
Cultural Compatibility		√		√		√	√	√		√	(6) High
Flexibility		√						√		√	(3) Low
Goal Setting							√				(1) Low
Influence					√						(1) Low
Information Sharing						√	√			√	(3) Low
Interdependence		√				√		√			(3) Low
Integration		√	√					√			(3) Low
Joint Action						√					(1) Low
Knowledge Sharing			√						√		(2) Low
Mutual Dependence	√										(1) Low
Mutual Understanding										√	(1) Low
Norm Development	√				√						(2) Low
Participation						√					(1) Low
Personal/Social Bonds				√							(1) Low
Power					√						(1) Low
Project Quality							√				(1) Low
Shared Vision				√							(1) Low
Trust	√	√	√	√	√	√	√	√	√	√	(10) High

Table 2. Relational Factors.

Looking at Table 2, two points can be made: (1) The set of 28 relational factors is too unwieldy to be used as a conceptual framework (2) There is a significant amount of overlap among the 28 relational factors. Hence we propose to refine and distil the set of relational factors into a smaller number of those factors that are the most important.

When we look at the number of articles that identified each factor, the frequencies of the factors appear to be broken into three groups: (1) 22 relational factors are discussed in between one to three papers (2) Five relational factors are discussed in between five to seven papers (3) One relational factor, Trust, is discussed in all ten papers.

We suggest that the relational factors that are discussed in between one to three papers can be viewed as having a low level of recognition. On the other hand, those relational factors that are discussed in more than five papers can be seen as having a high level of recognition. Therefore from now on we will focus only on those relational factors that have a high level of recognition. The remaining relational factors are: Commitment, Communication, Conflict Resolution, Cooperation, Cultural Compatibility, and Trust. Among the six remaining relational factors, Communication and Conflict Resolution appear to have substantial amount of overlap with Cooperation as most communication and

conflict resolution can be treated as forms of cooperation. Thus, Communication and Conflict Resolution are grouped into Cooperation. The resulting conceptual framework is thus comprised of four higher level relational constructs: Commitment, Cooperation, Cultural Compatibility, and Trust.

4 RELATIONAL CONSTRUCTS OF CLIENT-VENDOR RELATIONSHIP

Drawing from the literature from IT outsourcing, we now explore the implications of each of the four relational constructs in the context of cloud computing.

4.1 Commitment

Commitment is defined as the willingness of the parties to exert effort and devote resources in order to sustain an ongoing relationship (Fontenot and Wilson 1997). An organization's belief that an ongoing relationship with another party is important will ensure that maximum effort is given to maintaining their relationship (Dwyer et al. 1987; Morgan and Hunt 1994). Research has found that commitment is an important factor in the success of IT outsourcing (Grover et al. 1996; Koh et al. 2004; Lee and Kim 1999; Morgan and Hunt 1994). In particular, commitment has been found to be a major contributor to sustaining a successful relationship (Henderson 1990; Lee and Kim 1999; Monczka et al. 1998; Morgan and Hunt 1994). The commitment of either party to the relationship indicates that the party is serious about achieving success in this relationship, and therefore is willing to exert effort on behalf of the relationship (Mohr and Spekman 1994). As outsourcing arrangements evolve in complexity, the role of commitments can help to overcome the adaptive limits of the formal contracts (Hart and Moore 1988; Kern and Willcocks 2002; Poppo and Zenger 2002; Sull and Spinosa 2007). In particular, when unforeseen circumstances arise, commitment generates willingness to make contractual changes (Gundlach and Cadotte 1994) and encourages outsourcing partners to be proactive beyond what the contract suggests (Kern and Willcocks 2002; Klein 1996).

Although cloud services in theory allow clients to devote little or no commitment to the cloud vendor, in practice once the client starts using cloud services they risk of being locked into a long-term commitment. For instance, data in the cloud is often stored in a proprietary format (Armbrust et al. 2010; Hofmann and Woods 2010; Leavitt 2009). Such a limitation increases the switching cost of transitioning to an alternative vendor (Armbrust et al. 2010). Another challenge for clients is to get cloud vendors to commit to promised quality and performance standards (Durkee 2010). Due to intense price competition, cloud vendors often overcommit their levels of service to the clients (Durkee 2010). A study has shown that the performance of cloud services is often inconsistent at different times of the day (Hofmann and Woods 2010) and some cloud vendors may not be capable of guaranteeing high availability for their clients (Leavitt 2009).

Research thus suggests that cloud services, while initially requiring little commitment, over time will require a longer-term commitment to allow for the cloud vendor to become familiar with the clients' requirements (Durkee 2010). Moreover, the trend toward long-term commitments will drive cloud vendors to become more client-centric and have more focus on client satisfaction (Durkee 2010). Therefore we propose the following proposition:

Proposition 1: Commitment is positively related to the success of cloud computing arrangements.

4.2 Cooperation

Cooperation is defined as a spirit of working together by firms with the objective of achieving mutual benefits (Anderson and Narus 1990). Previous studies have found that cooperation is a determinant of outsourcing success (Grover et al. 1996; Kern 1997). In the context of IT outsourcing, two key elements within cooperation have been found to be significant: communication and conflict resolution (Kern 1997; Lee and Kim 1999).

Communication has a positive correlation with the quality of the IT outsourcing relationship (Lee and Kim 1999), and is an important determinant of outsourcing success (Grover et al. 1996). In particular, partners are able to act independently in maintaining the relationship by sharing information and by being knowledgeable about each other's business (Gopal and Gosain 2010; Mohr and Spekman 1994).

Conflict resolution is defined as the extent to which disagreements are replaced by agreement and consensus (Robey et al. 1989). Conflict in a relationship is inevitable (Dwyer et al. 1987; Mohr and Spekman 1994). Conflict in an outsourcing arrangement is particularly problematic given the level of detail in contracts, disparate goals of the parties and complexity of technology. Hence, the way conflict is resolved has implications for relationship success in outsourcing relationships (Kern 1997; Lee and Kim 1999). The two parties need to handle conflict effectively (Kern and Willcocks 2002).

The practitioner literature claims that cloud services aim to be rapidly provisioned and released with minimal management effort or service vendor interaction (Mell and Grance 2011). This service model provides self-service on-demand automatically without interaction between the client and the vendor (Mell and Grance 2011). Cloud services are designed to minimise the need of communication between the client and the vendor. Thus many cloud vendors do not focus on communication and interaction with their clients (Marston et al. 2011). Instead, the interaction between the client and the cloud vendor can be handled by service level agreement (SLA) resource allocators (Buyya et al. 2009). The SLA resource allocator acts as the interface between the client and the cloud vendor (Buyya et al. 2009).

Although communication and cooperation are not yet perceived as a prominent element of the client-vendor relationship in the literature with respect to cloud computing, Buyya et al. (2009) state that the commercial offerings of market-oriented cloud services must be able to support client-driven service management based on client profiles and requirements. This requires a deeper level of cooperation between the client and the cloud vendor. The role of cloud broker appears to be a favourable alternative when the organizations find it difficult to work directly with cloud service providers. Cloud brokers act on behalf of organizations identifying suitable cloud and acquiring cloud services that meet the quality of service requirements of clients (Buyya et al. 2010). Cloud brokers enable aggregation and management of cloud services from multiple domains, allowing cloud services from different cloud vendors to work together at the enterprise level (Marston et al. 2011).

In comparison with IT outsourcing, communication and cooperation do not appear to be prominent features of the client-vendor relationship in cloud computing arrangements as yet. However, the emergence of cloud brokers suggests that these aspects will become more prominent in future. Hence the following proposition is formed.

Proposition 2: Cooperation is positively related with the success of cloud computing arrangements.

4.3 Cultural Compatibility

Cultural compatibility is defined as the extent to which the parties can coexist with each other's beliefs about what values, behaviours, goals, and policies are important or unimportant, appropriate or inappropriate, and right or wrong (Morgan and Hunt 1994). Cultural similarity is considered to be an important determinant in relationship success (Fitzgerald and Willcocks 1994; Goles and Chin 2005; Hancox and Hackney 1999; Lasher et al. 1991; Morgan and Hunt 1994). Parties with incompatible organizational cultures are more likely to generate obstacles in an inter-organizational relationship, and eventually diminish the relationship (Goles and Chin 2005; Kumar and Van Dissel 1996; Lee and Kim 1999; Rai et al. 1996). This is particularly true for outsourcing relationships (Fitzgerald and Willcocks 1994; Klepper and Jones 1998; Willcocks and Choi 1995; Willcocks and Kern 1998). Therefore organizations should aim to minimize cultural differences between the two parties in order to make greater progress in achieving compatible objectives (Kanter 1994; Kern 1997).

Since the issue of cultural compatibility is very broad, we have divided this concept into three categories: (1) Loss of control. (2) Changes in the way organizations operate. (3) Sustainability. These categories are not exhaustive, but they represent a fair sample from the literature.

First, organizations need to be wary of surrendering control of their services and data to the cloud vendor who can change the underlying technology without the clients' consent (Sultan and van de Bunt-Kokhuis 2012). Data can be stored and processed in a foreign country in which the local laws and regulations may clash with the IT policy of the client (Marston et al. 2011). Therefore, a client needs to make sure that the cloud vendor complies with the policies of the client.

Second, cloud computing is not just about technological advancement; it represents an important change in how IT resources are provisioned and used (Creeger 2009). The elasticity of cloud computing allows organizations to adjust the provisioning of IT resources by closely following demand (Armbrust et al. 2010; Zhang et al. 2010). Transferring the task of IT provisioning to the cloud vendor allows organizations to free up their internal IT staff (Marston et al. 2011). However, IT departments may be reluctant to adopt cloud services since it may cause the organization to reduce IT staff and make them lose their jobs (Marston et al. 2011). Therefore, a client needs to make sure that the cloud vendor's service model is compatible with the requirements of the client.

Third, cloud computing embraces the idea of green IT. The centralized infrastructure of cloud computing has inherent potential for more energy-efficient uses of computing power (Baliga et al. 2011). Thus organizations can reduce the ecological impact of their IT operations. Hence we propose the following proposition.

Proposition 3: Cultural compatibility is positively related with the success of cloud computing arrangement.

4.4 Trust

In the outsourcing literature, trust is defined as the belief that the other party will behave fairly and perform actions that will result in positive outcomes for the firm even when the possibility for opportunism is present (Gulati 1995; Zaheer et al. 1998). Trust is one of the most important factors in the development and success of inter-organizational relationships (Anderson and Weitz 1989; Goles and Chin 2005; Hart and Saunders 1997; Lee and Kim 1999; Mohr and Spekman 1994; Morgan and Hunt 1994; Ring and Van de Ven 1994). Researchers have found trust to be a characteristic of successful IT outsourcing projects (Lee and Kim 1999; Sabherwal 1999). Chua et al. (2012a) point out three vendor characteristics related to trust that the client continuously evaluates: the integrity of the vendor (which assesses the vendor's openness, honesty and sincerity), the benevolence of the vendor (which assesses the vendor's willingness to consider the interests of the client), and the vendor's capability to deliver to the client (Ganesan 1994; Gefen et al. 2008).

In the context of cloud computing, trust has been viewed by IS researchers as the client's level of confidence in using the cloud. Trust is increased by mitigating technical and psychological barriers to using cloud services (Ko et al. 2011). Currently, the concerns affecting the level of trust in cloud computing are mainly associated with three components: security, privacy and reliability (Durkee 2010; Hofmann and Woods 2010; Jansen and Grance 2011; Leavitt 2009; Sun et al. 2011).

Traditionally, security models are set up to create a trust boundary within which there is self-control over computing resources and where sensitive information is stored and processed (Pearson and Benameur 2010). However, the security perimeter is blurred in cloud computing due to the processing of information outside of the clients' trusted areas (Khan and Malluhi 2010). Additionally, there are issues related to defining the responsibilities of the cloud vendors and clients in regards to security (Pearson and Benameur 2010). Moreover, the risk of access to confidential information is increased in the cloud environment (Pearson and Benameur 2010). For example, data in the cloud may be stored in a foreign country in which the regulations of the foreign government may not be favourable for protecting confidentiality of the data (Pearson and Benameur 2010). The issue of privacy is potentially problematic due to the lack of user control in the cloud environment (Khan and Malluhi 2010; Pearson and Benameur 2010; Sun et al. 2011). In the cloud computing environment, the storage of data is managed by the cloud vendor, which limits the visibility and control of the data from the client's perspective (Khan and Malluhi 2010; Pearson and Benameur 2010). Reliability of the cloud is another

challenge for building trust in the client-vendor relationship in cloud computing. Hence we propose the following proposition.

Proposition 4: Trust is positively related with the success of cloud computing arrangements.

5 DISCUSSION AND CONCLUSIONS

Cloud computing represents a new delivery model of IT resources. It is an IT sourcing model that enables on-demand, ubiquitous access to a shared pool of computing resources, including servers, applications, and IT services. Given that IS research on cloud computing is still in its infancy, we have suggested that there are lessons that can be learnt from earlier studies in outsourcing. While there are differences between cloud computing and outsourcing, there are also many similarities. Hence in this paper we have focused on one issue in particular: the relationship between the client and vendor. This is one of the first studies to focus on the client-vendor relationship in cloud computing.

Drawing on previous studies related to IT outsourcing, we have synthesized the factors related to outsourcing client-vendor relationships that might be relevant for cloud computing. Table 3 lists four propositions based on the four factors and we also make a few predictions based on these propositions.

Proposition 1: Commitment is positively related with the success of cloud computing arrangements.	**Prediction 1:** Cloud vendors that survive will demonstrate a high level of commitment through providing cloud services with high quality and availability, meeting the requirements of their clients.
Proposition 2: Cooperation is positively related with the success of cloud computing arrangements.	**Prediction 2:** Cloud vendors that survive will demonstrate a high level of cooperation by providing more client-centric, customized cloud services to meet the requirements of their clients.
Proposition 3: Cultural compatibility is positively related with the success of cloud computing arrangement.	**Prediction 3:** Successful cloud computing arrangements will demonstrate a high level of cultural compatibility between the client and the cloud vendor. The client and the cloud vendor will maintain good alignment in their values, behaviours, goals, and policies.
Proposition 4: Trust is positively related with the success of cloud computing arrangements.	**Prediction 4:** Successful cloud computing arrangements will demonstrate a high level of trust between the client and cloud vendor. The cloud vendor would build trust with the client by delivering cloud services that maintain a high level of security, privacy, and reliability.

Table 3. Cloud Computing Propositions and Predictions.

The main contribution of this research project is that it is one of the first IS research studies to focus on client-vendor relationships in cloud computing. We have suggested that four of the most important factors related to outsourcing client-vendor relationships are Commitment, Cooperation, Cultural Compatibility and Trust. Based on these four factors we have suggested four propositions related to client-vendor relationships and made four predictions on the future of cloud computing arrangements. For IS researchers, we hope that the propositions might be used to guide future empirical research into client-vendor relationship in cloud computing. For IS practitioners, the propositions might be used by clients and cloud computing vendors to maintain or improve their client-vendor relationship.

There are a few limitations of this research. First, although we have distilled lessons from the IT outsourcing literature for cloud computing, there are some differences between the two phenomena. Hence the factors we have identified from the outsourcing literature might end up not being those that are the most important in cloud computing. Second, the findings presented in this paper are based solely on a review of the literature. Hence we suggest that a fruitful avenue for future IS research would be empirical studies on client-vendor relationships in cloud computing to confirm, disconfirm or otherwise refine the findings presented here.

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