ANALYZING THE ROLES OF BUYERS, SUPPLIERS AND EMPLOYEES ON THE ADOPTION OF DISRUPTIVE TECHNOLOGY

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ABSTRACT

In a business to business context, the adoption of a disruptive technology can introduce great risks and benefits for all involved parties. In order to investigate the issues surrounding disruptive technology adoption, this dissertation analyzes the roles of buyers, suppliers, and employees within the adoption process. First, it is found that interorganizational trust has a positive impact on the likelihood of disruptive technology adoption, thus benefitting incumbent suppliers. Second, pre-existing interorganizational trust is shown to lead to lower quality adoption decisions from the buyers' perspective. Finally, employees are found to be less likely to accept disruptive technologies, as compared to incremental technologies. The influence of buyer, supplier, and employee relationships are complex and are explored in further detail in the following studies.

DEDICATION

This dissertation is dedicated to my friends, family, and colleagues who have supported me through this long, but fulfilling, process. Special recognition to Zinta Obal, Keith Obal, Allison Tolnai, Stuart Tolnai-Obal, Olive Obal-Tolnai, and my four committee members – Tony Di Benedetto, Nathan Fong, Werner Kunz, and Dick Lancioni.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1.

INTRODUCTION

In any industry, the emergence of disruptive technologies can present managers with numerous, difficult decisions. While the new, disruptive technology may potentially yield greater efficiencies and results than previous product generations, it is also likely to introduce a number of new risks. IT and innovation managers must decide if the new technology is appropriate for their firm, what factors to use to motivate their decision to adopt or not, and whether or not their employees will willingly accept the new technology. Within these decisions, managers must also decide to either stay with an incumbent supplier, with whom they may have an existing relationship, or to search out a newer supplier that may be more cutting-edge but with whom they have no existing relationship.

For disruptive technologies, which present higher levels of risk and uncertainty than incremental technologies, these decisions can come with significant consequences. Disruptive technologies often lack key capabilities and appear to be inappropriate to managers upon their initial release (Christensen, 1997). However, when disruptive technologies are successful, the "firms that supported the disruptive technology displace incumbent firms that supported the prior technology," thus benefitting the early adopter (Danneels, 2004). Given this high risk/high reward tradeoff, purchasing managers may look to mitigate some of their risk and uncertainty through trusting relationships with their existing technology suppliers (Pavlou, 2002). Yet, by doing this, the buying

managers may be unintentionally ignoring newer suppliers who may have superior, disruptive technologies (Henderson, 2006).

In order to better understand this dilemma, this three-part dissertation will analyze the roles of buyers, suppliers and employees on the adoption of disruptive technologies. First, I will look at how pre-adoption interorganizational trust between a buyer and supplier positively impacts adoption intent, thus favoring incumbent suppliers. Second, I will demonstrate how relying too much on strong, pre-existing supplier relationships may actually lead to lower quality adoption strategies for the buying firm. Third, I will look at the negative influence of individual, short-term motives on disruptive technology acceptance amongst employees and discuss potential moderators on this influence. While suppliers of disruptive technologies should be most interested in the factors that lead to product adoption, buyers should be most interested in the factors that lead to adoption of the most appropriate product for their firm's strategic needs and the factors that encourage acceptance of that product by their employees. This dissertation aims to cohesively explore all of these factors and relationships.

As noted, the first essay will provide a link between trust and the adoption of new, disruptive technologies in industrial markets. Previous research has noted that new suppliers traditionally have more success with the diffusion of disruptive technologies than incumbent suppliers (Henderson, 1993; Christensen, 1997). For the development of disruptive technologies, newer firms appear to be advantageous as they are generally more flexible in resource allocation (Tushman and Anderson, 1986; Henderson, 2006). However, exceptions can be found in various industries in which incumbents have been

able to succeed with the development of their own disruptive technologies (Chandy and Tellis, 2000; King and Tucci, 2002). One possible explanation for these exceptions is the influence of pre-existing levels of trust developed between incumbents and potential buyers of disruptive technologies. Trust is a construct of interest in this case as only incumbents, and not new entrants, would have the ability to develop it with customers prior to product adoption (Ganesan, 1994; Doney and Cannon, 1997; Seppanen et al., 2007). In order to explore this further, 134 IT managers were surveyed about their intent to adopt Software as a Service (SaaS), a form of cloud computing. According to Marston et al (2011), "cloud computing today shows all the characteristics of a disruptive technology," making it an appropriate technology to study. The results show how interorganizational trust, as developed with an incumbent, impacts the perceptions a potential buyer has towards a disruptive technology and consequently how these perceptions influence a buyers' intention to adopt a new, disruptive technology. Beyond trust, we use perceived ease of use, perceived value, perceived usefulness and financial stability to create a predictive model for intention to adopt. Holistically, this essay provides insight on how buyer-supplier relationships can impact a buyers' perception of a new, disruptive technology.

In the second essay, I focus on the antecedents of a quality adoption decision of a disruptive technology. Understanding how to make a quality adoption decision, as measured by confirmation, satisfaction, perceived usefulness, continuance intentions and continuance behaviors, is of critical importance for a buying manager considering a disruptive technology (Bhattacherjee, 2001). Given this challenge, I propose a model for

quality adoption decisions that considers the following precursors: normative supplier pressures, mimetic competitor pressures, interorganizational trust, efficiency motives, and searching efforts, and IT capabilities. This model was tested amongst 174 recent purchasing managers of a cloud computing service. Within this model, it is found that normative pressures from supplying firms lead to a lower quality adoption decision by the purchasing firm. Interestingly, the normative supplier pressures were predicted by the level of interorganizational trust present prior to the adoption decision and the pressure to mimic competitors. This finding comes in contrast to the previously held belief that high levels of interorganizational trust consistently lead to the most optimal decisions (Zaheer et al., 1998). The implication from this finding suggests that buying managers should not always rely on strong, pre-existing relationships in an adoption scenario. Instead, when adopting a disruptive technology, managers should be motivated to discover the most efficient technology for their needs and actually be willing to increase searching efforts in order to uncover the most appropriate technology.

In the third essay, I illustrate the negative influence of individual, employee motivations on the acceptance of disruptive technologies within the sales context. Sales force members were selected for this study as they are often subjected to new technologies without full consent (Robinson et al., 2005; Ahearne et al., 2007). Sales force members are often working away from a firm's main offices, hence a disconnect between a sales team and upper management is not an uncommon occurrence (Speier & Venkatesh, 2002). Disruptive technologies are relevant in this study as they do not simply replace the pre-existing generation of technologies through minimal, incremental

changes. Instead, the adoption of a disruptive technology requires the user to completely change the manner in which they use this type of technology (Danneels, 2004; Sherif et al. 2006). As this transition to a disruptive technology takes both time and effort, the individual employee is likely to be distracted from their primary goals (e.g. hitting deadlines, milestones). Firms, however, are more motivated by long-term, strategic goals and should aim to encourage their employees to accept an emerging, disruptive technology (Christensen, 1997; Tellis, 2006). Results from a survey of 163 sales force members reveal that the disruptiveness of a technology negatively moderates the influence of individual motives on technology acceptance. However, increased managerial support is shown to positively moderate the same main effect, thus negating the impact of individual motives on acceptance of disruptive technologies. To enrich this study, a new scale that measures the disruptiveness of a technology at the employee level is introduced.

Taken as a whole, this dissertation uncovers some obstacles and considerations for the adoption of disruptive technologies. It has been found that the intention to adopt a specific disruptive technology is influenced by interorganizational trust, thus benefitting incumbent suppliers who offer that disruptive technology. However, it has also been found that basing disruptive technology adoption decisions on pre-existing supplier relationships can be less than optimal and that searching efforts should actually be increased in this type of adoption scenario. Finally, it was found that employee motivations may hinder the acceptance of disruptive technologies, therefore motivating managers to increase their level of support when introducing these types of technology.

From a buyers' perspective, this dissertation demonstrates that relying too heavily on normative pressures from suppliers and interorganizational trust may not lead to the most optimal adoption strategy. Instead, efficiency motives should be favored. From an employee's perspective, this dissertation shows how their individual goals may delay the acceptance of the new technology within a firm. Yet, it also shows the positive impact managerial support can have on the adoption of a disruptive technology. From a sellers' perspective, this dissertation demonstrates that buyer-supplier trust does matter in these risky adoption decisions and that buyers, perhaps naively, can be influenced by previous business relationships. In sum, this dissertation contributes to literature streams in innovation, buyer-seller relationships, technology adoption and diffusion, and sales management.

CHAPTER 2.

ESSAY 1: WHY DO INCUMBENTS SOMETIMES SUCCEED? INVESTIGATING THE ROLE OF INTERORGANIZATIONAL TRUST ON THE ADOPTION OF DISRUPTIVE TECHNOLOGY

Abstract

Previous research has noted that new firms traditionally have more success with the diffusion of disruptive technologies than do incumbent firms. For the development of disruptive technologies, newer firms appear to be advantageous as they are generally more flexible in resource allocation. However, exceptions can be found in various industries in which incumbents have been able to succeed with their own disruptive technologies. One possible explanation for these exceptions is the influence of pre-existing levels of trust already developed between incumbents and potential buyers of disruptive technologies. In order to explore this further, this article provides a link between interorganizational trust and the adoption of new, disruptive technologies in industrial markets. By surveying 134 current and potential Software-as-a-Service (SaaS) users, we show how pre-existing, interorganizational trust impacts the perceptions a potential buyer has towards a disruptive technology and how these perceptions influence a buyers' intention to adopt a new, disruptive technology. Beyond trust, we use perceived ease of use, perceived value, perceived usefulness and financial stability to create a predictive model for intention to adopt. Holistically, this article provides insight on how

buyer-supplier relationships generally favor incumbent firms and can impact a buyers' perception of a new, disruptive technology.

Introduction

The concept of disruptive innovation and technology has been a hotly discussed and researched idea since its introduction in 1997 (Christensen, 1997; Danneels, 2004). By definition, a disruptive technology initially appeals only to fringe customers, but eventually improves and displaces the dominant technology that had been long used by mainstream customers (Christensen, 1997; Tellis, 2006). Post hoc examples of disruptive technologies include online financial trading overtaking traditional trading and digital cameras displacing film and disposable cameras (Danneels, 2004). One of the most interesting findings is that new entrant firms tend to be more successful than incumbents with the introduction and emergence of disruptive technologies (Henderson, 1993; Christensen, 1997). The reasoning for this claim is that incumbents tend to be too slow, routinized and uninterested in developing disruptive technologies to properly develop them. Meanwhile, new entrants are flexible, opportunistic and focused on dislodging dominant technologies, therefore providing them with an advantage in developing disruptive technologies (Tushman & Anderson, 1986; Christensen, 1997). Despite this claim, recent research has found numerous examples of incumbents succeeding in the face of disruptive technologies (Chandy & Tellis, 2000; Danneels, 2004). However, explaining how incumbents have been able to succeed with disruptive technologies

remains an unanswered question (Danneels, 2004). In this article, we aim to help answer this question by demonstrating how a buyer's trust with an incumbent firm can influence their adoption of a disruptive technology.

The decision to adopt a new innovation inherently comes with risk and uncertainty (Rogers, 1983). When the technology under consideration is a disruptive innovation, the levels of uncertainty associated with the product increase even more (Danneels, 2004). This uncertainty causes the potential buyer to become uncomfortable, to which they respond by increasing communications with others (Katz & Tushman, 1979; Van de Ven et al., 1976). These increased interactions can sway the buyer's decision to adopt or not adopt a new technology, especially if the source the buyer is interacting with is deemed trustworthy (Karahanna et al., 1999; Pavlou, 2003). This is generally good news for incumbents who are likely to have higher levels of trust with potential buyers than new entrants due to their size, reputation and experience working with buyers (Ganesan, 1994; Doney & Cannon, 1997; Seppanen et al., 2007). Conversely, new entrants will generally have lower levels of buyer-supplier trust as they have not had the time or opportunity to develop trust with their potential buyers (Chandy & Tellis, 2000). These potentially higher levels of buyer-suppler trust, also referred to as interorganizational trust, may allow incumbents to counter act the perceived advantages new entrants have in resource and organizational flexibility that have often led to their successes with disruptive technologies.

In order to explore this, we used an adapted technology acceptance model (TAM) to investigate the adoption rates of Customer Relationship Management (CRM) delivered

via Software-as-a-Service (SaaS), a form of cloud computing, and analyzed the influence of interorganizational trust. According to Marston et al (2011), "cloud computing today shows all the characteristics of a disruptive technology," making it an appropriate technology to study. Starting out as more of a fringe technology, SaaS has gradually become more popular amongst mainstream firms and has begun replacing dominant, pre-existing technologies (Gartner, 2009; Tellis, 2006). Furthermore, the SaaS CRM market is interesting for this study as both incumbents (e.g. Microsoft, Oracle) and new entrants (Salesforce.com, SugarCRM) are strongly positioned within the top five in market share (CRM Café, 2012). We also take into consideration economic factors, such as the perceived financial stability of a firm and the perceived value of the new technology, as predictors of adoption intention.

This article provides a link between interorganizational trust and the adoption of new, disruptive technologies. Specifically, we survey 134 IT managers and show how interorganizational trust can influence a buyer's view of a technology's ease of use, usefulness, and value, which in turn influence their likelihood of adopting. We also provide insight on how the influence of interorganizational trust may benefit incumbent firms who are selling disruptive technologies. Overall, this article should help explain why some incumbents are able to succeed in the face of an emerging, disruptive technology.

Background Literature

Disruptive Technology and Software-as-a-Service

Introduced in 1997 by Clayton Christensen in *The Innovator's Dilemma*, the concept of disruptive technology has become a popular topic in both academic circles and mainstream press over the past fifteen years. According to Christensen (1997), disruptive technologies generally underperform upon their initial release as they tend to fall short of the dominant technology on the product dimensions that are most valued by mainstream customers. However, disruptive technologies tend to exceed the capabilities of dominant technologies on a few dimensions that are appealing to a few fringe customers. As the disruptive technology improves over time, it gradually outgrows the emerging market it began in and starts capturing the attention of mainstream customers. Eventually, the disruptive technology displaces the dominant technology within the mainstream market and, as a consequence, the fringe customers who adopted the disruptive technology displace the mainstream customers who stayed with the previously dominant technology (Christensen, 1997; Tellis, 2006).

One of Christensen's (1997) main contributions was the discovery that new entrants tend to have more success with the emergence of disruptive technologies than incumbents. By definition, a firm is considered an incumbent "if it manufactured or sold products that belonged to the previous product generation on the introduction date [of the disruptive technology]" (Chandy & Tellis, 2000, p. 7). Firms that did not produce or sell

the previous generation of a given product class are considered new entrants. Henderson (1993) found that incumbents tend to invest more in incremental innovations that build off of their previous products while new entrants were more likely to invest in radical innovations. She explains that larger, incumbent firms may be saddled by their assets, therefore reducing the efficiency of their attempts at radical innovation. Furthermore, incumbent firms have likely already developed effective routines for handling their customers, therefore leading to organizational inertia (Henderson, 2006). As such, refocusing their efforts on disruptive innovations would require the incumbent to undertake major changes that do not build upon their current strengths. Conversely, new entrants are not constrained by prior competencies and routines and are more able to take advantage of technological opportunities (Tushman & Anderson, 1986). Therefore, it is often assumed that the adaptability and lack of desire to build off of previous technologies benefits new entrants who are interested in developing disruptive innovations (Danneels, 2004).

Despite this apparent advantage for new entrants, numerous examples can be found of incumbents succeeding in the face of emerging disruptive technologies. King & Tucci (2002) found that experienced firms in the hard-disk-drive industry were actually more likely to enter new niche markets than less experienced firms. Slater & Mohr (2006) note that the successful commercialization of a disruptive innovation requires a firm to not only develop a breakthrough innovation, but to also reach beyond a niche market to a mainstream audience. Thus, large, pre-established distribution systems become a point of competitive advantage for incumbents. Furthermore, the link between

incumbency and inertia (defined as lack of entry and success in subsequent technological markets) is generally overstated (King & Tucci, 2002). In fact, Chandy & Tellis (2000) found that incumbents have introduced the vast majority of radical product innovations over the past several decades. As noted by Danneels (2004, p. 252), "many, but not all, incumbents fail in the face of disruptive technology. Therefore the following question yet is unanswered: What determines whether incumbents fail or succeed in the face of disruptive technology?"

While the exact definition of disruptive technology remains a controversial topic, academics agree that the concept is legitimate and warrants further investigation (Danneels, 2004; Markides, 2006). Disruptive technologies not only change the manner in which a user behaves, but they also introduce one or more product dimensions previously unseen in a given market. Because of this, disruptive technologies have the capability of changing the bases of competition in a given market. As noted by Marston et al. (2011), "cloud computing today shows all the characteristics of a disruptive technology." True to the concept of disruptive technology, "many of the innovative services that will be developed on the cloud will soon make many cloud computing applications functionally richer than their in-house counterparts."

Software-as-a-Service (SaaS), which allows users to run applications on a "cloud" as opposed to installing the application on a hard drive, is one of the most commonly heard phrases related to cloud computing. SaaS has been identified as an emerging technology that could prove crucial to the success of numerous organizations over the next decade (Varadarajan et al., 2009). Traditionally, a firm would purchase a software

license for a given application, such as a Customer Relationship Management (CRM) package, and install the application on individual machines. With SaaS, a firm simply signs up to use the application through a vendor that hosts the software package. The purchasing firm is still provided with the same capabilities that the traditional software package would offer, but they are able to avoid the time consuming and expensive processes of installing, maintaining and updating this software. SaaS users are also given much more flexibility; if their application provider fails to meet expectations, they can simply switch providers. In most cases, the cost of this switching will be cheaper than going through an entire overhaul of traditional, in-house software. SaaS also provides firms with much greater scalability; instead of purchasing new software, they simply sign up for a new service (Dubey & Wagle, 2007).

Although SaaS appears to introduce a few new dimensions not seen in traditional software, acceptance of this technology is not yet widespread. While Gartner Research (2009) recently found that approximately 30% of surveyed firms intended on increasing their current levels of SaaS over the next two years, they also found that 10% of firms actually planned on decreasing their dependency on this technology. The study revealed the following issues with current and potential customers; "Underwhelming customer satisfaction scores, hesitation over the true cost of SaaS solutions, and concerns regarding how successfully SaaS applications can be integrated with other applications all point to issues that will need addressing and resolving." (Gartner Research, 2009). Survey respondents considered the applications' abilities to meet technical requirements and the

ease of integration and functionality as two of the most pressing issues when deciding whether or not to adopt SaaS.

These issues with SaaS appear to satisfy the generally held definition of an emerging, disruptive technology – lagging behind the dominant technology on mainstream values, exceeding the dominant technology on fringe values, popular with fringe customers and slowly increasing in popularity amongst mainstream customers (Marston et al., 2011; Varadarajan et al., 2009). According to Tellis (2006), SaaS would completely satisfy the definition of a disruptive technology by displacing the dominant technology – in-house software applications. In order to do this, adoption rates must continue to increase, especially amongst mainstream customers.

Trust and Interorganizational Trust

Building long-term relationships is crucial in B2B environments. Previous literature has shown that at the core of this relationship approach is the idea of building trust. Trust is defined as "a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behaviors of another" (Rousseau et al. 1998, p. 395). It has been found that trust is developed when a buyer views the firm or salesperson as honest, reliable, consistent, and trustworthy (Doney & Cannon 1997). According to Morgan & Hunt (1994), trust and relationship commitment are the key components to building cooperative relationships between customers and firms. Subsequently, building cooperative relationships is crucial to creating relationship

marketing success. Morgan and Hunt explain that a firm builds commitment and trust by providing superior benefits, maintaining high standards of corporate values, communicating valuable information, and avoiding taking advantage of partners and customers. Subsequent literature has built off of these ideas and applied them in various areas of interest.

One such area that it has been applied is interorganizational trust. Interorganizational trust refers to the trust placed upon a supplier organization by the members (e.g. employees) of the buyer organization (Zaheer et al., 1998). By definition, interorganizational trust is "the subjective belief with which organizational members collectively assess that a population of organizations will perform potential transactions according to their confident expectations, irrespective of their ability to fully monitor them" (Pavlou, 2002). Ultimately, interorganizational trust is seen to be driven by both the predictability of a trustor's expectations about an organization's behavior and the confidence in an organization's goodwill – otherwise referred to as credibility and benevolence (Doney & Cannon 1997).

Interorganizational trust is an important concept as it is generally believed to be important for the success of interfirm relationships (Jeffries & Reed, 2000). It has proven to lead to positive outcomes such as competitive advantage, performance, perceived risk reduction and satisfaction (Zaheer et al., 1998; Pavlou, 2002). This concept has been applied in economics, where it states that trust can lead to efficient transactions by reducing transaction costs (Bradach & Eccles, 1989). In the organizational literature, trust has been shown to reduce opportunism and promote cooperation (Morgan and Hunt,

1994). Other studies have acknowledged that trust is a crucial component in outsourcing relationships (Langfield-Smith & Smith, 2003).

According to Seppanen et al. (2007), the antecedents of trust development include past behaviors of the supplier and the status of the relationship between the buyer and supplier. Doney & Cannon (1997) note that purchase experience with a given vendor can influence trust and purchase intent, stating that "a buying firm might be partial to a supplier with which it has more purchasing experience" (Doney & Cannon, 1997, p. 42). Similarly, the supplier's size and reputation tend to have an impact on interorganizational trust (Doney & Cannon, 1997). Ganesan (1994) found that a buyer's trust in a supplier tends to be higher in long-term interorganizational relationships. Furthermore, the vendor's reputation is highly predictive of the retailer's trust with that vendor (Ganesan, 1994). Finally, Poppo et al. (2008) found that a long prior history between a buyer and supplier has more influence on interorganizational trust than a short prior history when expectations of a future relationship are present. These findings all highlight the inherent advantage that an incumbent may experience in trust development. By definition, an incumbent firm is one that has sold previous generations of a given technology while new entrants have not (Chandy & Tellis, 2000). As such, these incumbent firms have had more experience working with potential buyers and tend to have more established reputations. Further, incumbents tend to be larger than new entrants (Chandy & Tellis, 2000). Based on their size, reputation and experience working with buyers, incumbent firms are likely to have higher levels of interorganizational trust with potential buyers than new entrants, who do not have the ability to rely on past successes (Ganesan, 1994;

Doney & Cannon, 1997; Seppanen et al., 2007). Subsequently, these higher levels of trust may influence a consumer's likelihood of adopting a new technology (Pavlou, 2003).

Technology Acceptance Model (TAM)

Perhaps the most widely used model for technology adoption is the Technology Acceptance Model (TAM). In their seminal paper, Davis et al. (1989) found that perceived usefulness and ease of use were the biggest determinants of a person's intent to use and adopt a new technology, thereby creating the TAM. These relationships between perceived usefulness, perceived ease of use, attitudes, and intentions have been supported in the information technology literature (e.g., Adams et al., 1992; Subramanian, 1994). TAM has been used effectively in a variety of research settings, including individual consumer adoption of new technology, adoption of new technology amongst salespeople, and adoption of new technology amongst purchasing units (Venkatesh & Bala, 2008; Aboelmaged, 2010). Pavlou (2003) expanded the model further to include trust and risk as constructs by analyzing the uncertain environment of e-commerce. He found that trust could be modeled as a predictor of technology adoption and a mediator of perceived usefulness and ease of use. This study was one of the first to acknowledge the impact of trust in technology acceptance and diffusion of new technology in any environment.

More recently, B2B and industrial marketing researchers have applied the TAM to their studies (Avlonitis & Panagopoulos, 2005; Robinson et al., 2005; Schillewaert et al., 2005; Lee & Park, 2008). Within an organizational context, perceived usefulness is

defined as the prospective user's subjective probability that using a specific technology will increase his/her job performance (Davis et. al 1989). Perceived ease of use refers to the degree to which the prospective user expects the technology to be free of effort (Davis et al. 1989). Avlonitis & Panagopolous (2005) found that a modified version of the TAM could lead to the acceptance of CRM software amongst salesmen while Aboelmaged (2010) used the TAM to predict e-procurement adoption amongst IT buyers. According to the TAM, perceived usefulness and ease of use both affect a person's attitude toward using a new technology system, and consistent with the Theory of Reasoned Action (TRA), these attitudes toward using the new technology system determine behavioral intentions, which in turn lead to actual system use (Ajzen & Fishbein, 1980; Venkatesh, 2000; Aboelmaged, 2010). Therefore, as this study focuses on the attitudes, intentions and behaviors of potential buyers of a disruptive, organizational technology (SaaS), the TAM is a very applicable model.

Economic Considerations

While the TAM has been an extremely popular building block in the marketing and IT literature, another stream of literature has argued that technology adoption in B2B is primarily driven by strategy and economics (Pires & Aisbett, 2003; Davila et al., 2003). In the organizational context, the TAM certainly takes strategy into consideration as perceived usefulness of a new technology measures the probability of increased job performance caused by the adoption of that new technology (Davis et. al, 1989).

However, the TAM does not take into account the implications of firm economics. Davila et al. (2003) found that adoption rates of new technology are often based on the economic situation of a given firm. Companies that are more financially sound and enjoy a stronger competitive position will adopt technology more aggressively while laggards will wait to see whether or not these superior firms benefit from the new technology (Davila et al., 2003). Similarly, large firms tend to adopt innovations before smaller firms (Davies, 1979; Attewell, 1992). In sum, the financial stability of a firm is a predictor of that firm's likelihood of adopting a new technology.

Another stream of literature has noted that technology is perceived as more useful if the firm sees the benefits of that technology as outweighing the sacrificed costs. As explained by Dodds et al. (1991), "the cognitive tradeoff between perceptions of quality and sacrifice results in perceptions of value." Subsequently, willingness to buy is directly influenced by perceived value. Extending this theory to an adoption context, Kim et al. (2007) found that perceived value, which they constructed as a trade-off between benefit and sacrifice, directly predicted adoption intention for new technology. Therefore, perceived value of the new technology should be used as a predictor of the firm's intention to adopt the new technology.

In an organizational context, economics must certainly be considered in technology adoption. However, reliance on only strategic and economic theories ignores the vast behavioral literature that has acknowledged trust as a major factor in inter-firm relationships and in most, if not all, B2B transactions (Zaheer et al., 1998; Jeffries & Reed, 2000). Considering the high levels of uncertainty involved in any adoption

scenario, interorganizational trust should be analyzed as a factor for firms considering adopting new technologies (Jensen, 1982). As argued by Benlian and Buxmann (2009), economic and strategic models "should be complemented by behavioral theories to yield better and more general explanations of IT adoption." In support of this argument, we propose a model that integrates economic and strategic variables, such as financial stability, perceived ease of use, perceived usefulness and perceived value, with the theory of interorganizational trust.

Conceptual Framework and Hypotheses

The goal for this study is to build a model demonstrating the influence of interorganizational trust on the adoption of new, disruptive technology in the B2B environment. This builds upon previous literature that has, up to this point, focused primarily on the adoption of technology as a strategic and economic decision and has subsequently ignored trust. Furthermore, we provide insight on how incumbent firms can take advantage of pre-established levels of trust in order to increase adoption levels of their disruptive technologies (Ganesan, 1994; Doney & Cannon, 1997; Seppanen et al., 2007). New entrants, who are generally smaller and less experienced, likely would not have the benefit of pre-established interorganizational trust and may not be able to directly profit from this model.

In order to develop this model, we first consider the elements of the TAM. As first discussed by Davis et al. (1989), technology usage can be predicted by a person's

intentions. These intentions are primarily driven by the perceived usefulness of the technology. The perceived ease of use of the technology is a significant secondary determinant of a person's intentions to adopt new technology. More recently, the TAM has been used effectively in various manners in the industrial marketing literature (Avlonitis & Panagopoulos, 2005; Robinson et al., 2005; Schillewaert et al., 2005; Lee & Park, 2008). Given the established nature of the TAM, and the successful use of it in the industrial marketing literature, we used it as a basis for our model. In accordance with previous literature (Davis et. al 1989; Pavlou 2003), we hypothesize the following:

Hypothesis 1. Perceived usefulness has a positive effect on intention to adopt.

Hypothesis 2. Perceived ease of use has a positive effect on intention to adopt.

Hypothesis 3. Perceived ease of use has a positive effect on perceived usefulness.

As discussed, much of the B2B adoption literature centers upon strategy and economics (Pires & Aisbett, 2003; Davila et al., 2003). While the TAM may take into consideration a firm's strategy, it does not appear to capture any economic considerations, such as the perceived value of the product or the perceived financial stability of the firm. First, we consider the impact of the perceived value of the product on perceived usefulness and intention to adopt. As noted by Dodds et al. (1991), firms find technology to be more useful if the firm sees the benefits of that technology as outweighing the sacrificed costs, otherwise referred to as perceived value. In an adoption

scenario, Kim et al. (2007) found that the perceived value of a new technology can directly impact adoption rates. Similarly, Wang & Wang (2010) found that the perceived value of a mobile hotel reservation service, as driven by the service's perceived benefits and the perceived sacrifices by the customer, was a predictor of customer adoption of the mobile service. Furthermore, the overall value of a given product has been found to impact both the customer's future behavioral intentions to use the product in the future and their intention to spread positive word-of-mouth (Turel et al., 2010). In accordance with this literature, we hypothesize the following:

Hypothesis 4. Perceived value has a positive effect on intention to adopt.

Hypothesis 5. Perceived value has a positive effect on perceived usefulness.

As noted by previous literature, the perceived value of a product is highest when perceptions of customer sacrifice are low (Dodds et al., 1991; Wang and Wang, 2010). This finding would seem to indicate that products that are easier to use are viewed as more valuable. According to Kaasinen (2005), perceived ease of use can actually act as a predictor of the perceived value of a technology. Wang & Wang (2010) found that the increased technological effort required for adoption can decrease the perceived value of a product. Similarly, Ko et al. (2009) found that perceived value was an important mediating variable in the adoption of mobile commerce and was driven by ease of use. Given these findings, we hypothesize that:

Hypothesis 6. Perceived ease of use has a positive effect on perceived value.

As found by Davila et al. (2003), financially stable firms are more likely to adopt new technology than firms that are less financially stable. Firms that are financially sound and have a strong competitive position tend to be more willing to take on risk and therefore are more likely to adopt new technologies (Davila et al., 2003). Large firms also show a comparable trend, as they are able to take on more risk as compared to smaller firms (Davies, 1979; Attewell, 1992). Similarly, Thong (1999), found that larger "businesses that have adequate financial and organizational resources" (p. 206) were more likely to adopt an information technology product. Smaller firms were less likely because the adoption of a new technology presented a disproportionately large financial risk that may not be tenable. Therefore, we posit that:

Hypothesis 7. Financial stability has a positive effect on intention to adopt.

Next, we explore the role of interorganizational trust, which has been found to play a crucial role in B2B transactions (Zaheer et al., 1998). Pavlou (2003) found that, in a B2C setting, trust between a customer and a vendor had a significant effect on the perceived ease of use and perceived usefulness of a given technology. However, no previous study has looked at this phenomenon in a B2B setting. This is noteworthy as B2C relationships often do not include long-term, buyer-vender interactions while B2B relationships tend to be much more enduring and personal, thus highlighting the

importance of trust within the B2B setting (Poppo et al., 2008). The underlying value of interorganizational trust is that it reduces uncertainty for the buyer (Pavlou & Gefen, 2002; Kim & Prabhakar, 2000). The buyer is often very uncertain when considering disruptive technologies, as "established companies tend to be skeptical of disruptive technologies" (Danneels, 2004, p. 250). As uncertainty increases, the potential buyer tends to increase communications with others (Katz & Tushman, 1979; Van de Ven et al., 1976) and subsequently becomes more susceptible to being swayed into an adoption decision (Karahanna et al., 1999). This likelihood of being swayed increases if the source of communications is trustworthy (Pavlou, 2003). Therefore, we propose that the most commonly cited drivers of intention to adopt, perceived ease of use and perceived usefulness, (Davis et al., 1989) will be positively influenced by the level of interorganizational trust:

Hypothesis 8. Interorganizational trust has a positive effect on perceived ease of use.

Hypothesis 9. Interorganizational trust has a positive effect on perceived usefulness.

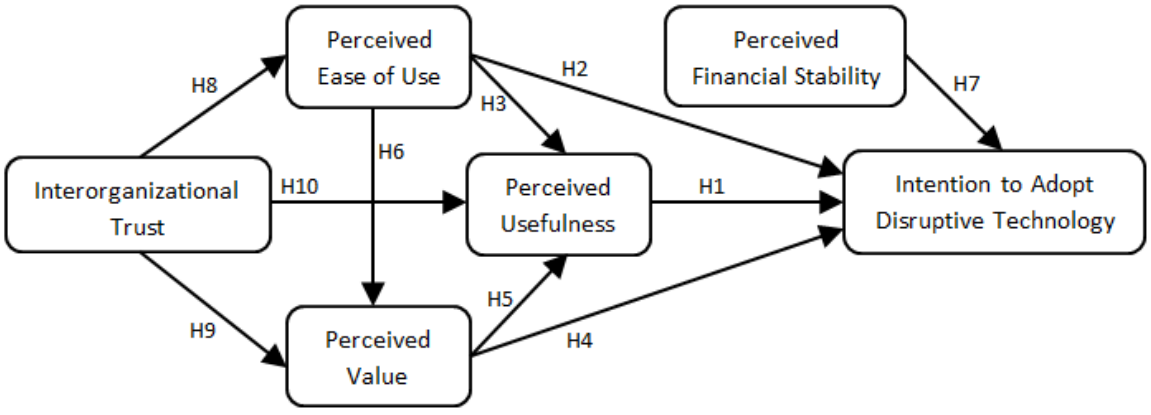
Finally, as technology adoption in B2B must take a decidedly economical viewpoint, we consider the effect of interorganizational trust on perceived value. We submit that interorganizational trust can positively affect the perceived benefits of a new technology, thereby diminishing the perceived sacrificed costs of the new technology and

subsequently increasing the perceived value (Dodds et al., 1991). Once again, as the uncertainty surrounding a disruptive technology causes the buyer to communicate more with a trusted supplier, the buyer becomes more susceptible to being swayed (Karahanna et al., 1999; Katz & Tushman, 1979; Van de Ven et al., 1976). As noted by Turel et al. (2010), social factors can actually influence the perceived value of a product. Deriving from this finding, we propose that the trust a buyer has in a supplier can actually influence the perceived value of a supplier's product(s). Therefore, we hypothesize:

Hypothesis 10. Interorganizational trust has a positive effect on perceived value.

Figure 1 presents the proposed model for technology adoption in a B2B scenario. As described, this model is advantageous to previous models as it considers economic, strategic and behavioral theories.

Figure 1. Proposed Model



Method

142 Information Technology (IT) managers, collected through a Qualtrics panel, were surveyed about their firms' CRM usage. In order to qualify for the survey, respondents were screened to include, 1) only those who used CRM on a regular basis and, 2) individuals who had input into the major IT decisions within their firm. CRM SaaS is viewed as an appropriate technology for this study as it not only represents an emerging, disruptive technology, but also one in which numerous incumbents, such as Oracle and Microsoft, have had success (CRM Café, 2012; Marston et al., 2011). Data was collected in two installments: 50 respondents in March of 2011 and 92 respondents in April of 2011. All were asked if their current CRM provider offered SaaS CRM. 8 individuals responded that their CRM provider did not provide software as a service and were subsequently dropped from the final analysis. Therefore, the final sample consisted of 134 IT managers. Of this final sample, 99 managers reported that their company currently used SaaS CRM while 35 reported that their company did not. Descriptive statistics can be seen in Appendix A.

Respondents who acknowledged that their current provider offered SaaS CRM were taken to the full questionnaire, which consisted of 17 items pertaining to our variables and 7 firm-specific, demographic items. Interorganizational trust was measured using four items adapted from Doney & Cannon (1997). Perceived ease of use and perceived usefulness were measured using two and three items, respectively, adapted from Pavlou (2003). Perceived value was measured on a two item scale derived from

Dodds et al. (1991), while perceived financial stability was measured using three, newly developed items. Finally, intention to adopt was measured using three items derived from Pavlou (2003). All items were measured on a 5-point Likert scale. Correlations, means and standard deviations for all items can be seen in Appendix B.

Results

A confirmatory factor analysis (CFA) was conducted to confirm the validity and reliability of the data. AMOS 18.0 was used to conduct the CFA. Because each variable was represented by at least two items, we could use a standard CFA for the model identification by correlating all variables (Kline, 2010). No items needed to be dropped; the model obtained a satisfactory fit with the data (χ^2 = 110.835; df = 104; p=.305; CFI=.993; IFI=.994; RFI=.878; NFI=.906; RMSEA=.022 (.000-.051); SRMR=.437). As we show in Table 1, the average variance extracted (AVE) exceeds .5 for all variables, the Cronbach's alpha values all exceed .7 , and all item loadings approach or exceed .7, in support of convergent validity and reliability (Cook & Campbell 1979; Fornell 1982; Hair et al. 1992; Kline, 2010). As shown in Appendix C, the inter-item correlations were higher within factors than the correlations across factors, thus satisfying the primary criteria for discriminant validity (Churchill, 1979). Overall, the model exhibits satisfactory reliability, discriminant validity and convergent validity.

Table 1. Items and Factor Loadings

Construct	Observed Indicator	Factor Loadings	AVE	Cronbach's Alpha
Interorganizational Trust	Trust1. Our current CRM supplier is trustworthy.	0.706	.548	0.828
	Trust2. We believe the information that our CRM supplier provides us.	0.785		
	Trust3. When making important decisions, our CRM supplier considers our welfare as well as his own.	0.698		
	Trust4. Our current CRM supplier is genuinely concerned about our business success.	0.769		
Perceived Ease of Use	Ease1. From my understanding, interacting with SaaS CRM is clear and understandable.	0.817	.652	0.787
	Ease2. From my understanding, SaaS CRM is easy to use.	0.798		
Perceived Usefulness	Useful1. Overall I think SaaS CRM is/could be useful.	0.742	.577	0.799
	Useful2. I think that SaaS CRM is/ could be valuable to my company.	0.809		
	Useful3. SaaS CRM is/ could be useful to my company.	0.725		
Perceived Value	Value1. SaaS CRM is typically considered a good buy given its perceived benefits.	0.795	.617	0.755
	Value2. SaaS CRM is generally considered a good value for the money.	0.776		
Perceived Financial Stability	Fin1. Our firm has exceeded financial performance expectations over the past 5 years.	0.795	.626	0.822
	Fin2. Our firm has exceeded financial performance expectations over the past 2 years.	0.889		
	Fin3. Our firm can afford to spend on the newest technology.	0.676		
Intention to Adopt	Intent1. Our firm intends on increasing our use of SaaS CRM in the future.	0.716	.568	0.791
	Intent2. Our firm intends on gradually replacing our use of in-house CRM software with SaaS CRM in the future.	0.704		
	Intent3. Our firm plans to increase the integration of SaaS CRM in the future.	0.835		

Note: N=134; Chi-square = 110.835; df = 104; p=.305; CFI=.993; IFI=.994; RFI=.878; NFI=.906; RMSEA=.022 (.000-.051); SRMR=.437

The hypotheses were tested using a regression analysis conducted on SPSS 19.0. As can be seen in Table 2, we find support for eight of our ten hypotheses. As expected, perceived usefulness increased the individual's intention to adopt ($\beta = 0.342$, $p = 0.001$),

therefore providing support for hypothesis 1. Hypothesis 2 was not supported as perceived ease of use did not have a significant influence on intention to adopt (β = 0.022, p = 0.866). However, perceived ease of use did positively influence perceived usefulness (β = 0.411, p = 0.000), thereby providing support for hypothesis 3. Consequently, a Sobel (1982) test found that perceived ease of use had an indirect effect on intention to adopt and that the relationship was fully mediated by perceived usefulness (Sobel test statistic = 5.697, p = 0.000).

Hypothesis 4 was not supported as perceived value did not have a significant influence on intention to adopt (β = 0.195, p = 0.192). However, perceived value did positively influence perceived usefulness (β = 0.387, p = 0.003), thereby providing support for hypothesis 5. A subsequent Sobel test revealed that the influence of perceived value on intention to adopt was fully mediated by perceived usefulness (Sobel test statistic = 5.681, p = 0.000). Perceived ease of use had a positive, significant effect on perceived value (β = 0.465, p = 0.000), thus providing empirical support of hypothesis 6. Finally, perceived financial stability positively influenced intention to adopt (β = 0.263, p = 0.000), therefore providing support for hypothesis 7.

Hypotheses 8, 9, and 10 examined the role of trust on perceived ease of use, perceived usefulness, and perceived value, respectively. As expected, all hypotheses were supported as trust had a positive, significant influence on ease of use (β = 0.318, p = 0.000), perceived usefulness (β = 0.184, p = 0.003), and perceived value (β = 0.163, p = 0.000).

Finally, the seven demographic items were introduced to the model, with only the percentage of software currently deployed through SaaS being found as predictive of intention to adopt ($\beta = 0.252$, $p = 0.032$). However, the model fit did not improve substantially with the inclusion of control variables. Therefore, all control variables were ultimately dropped from the analysis.

Table 2. Regression Analysis

	Unstandardized Estimate	p-value	t-value	R-square	Hypothesis
H1: Perceived Usefulness → Intention to Adopt	0.342	0.001	3.489	0.389	H1 supported
H2: Perceived Ease of Use → Intention to Adopt	0.022	0.866	0.169		H2 not supported
H4: Perceived Value → Intention to Adopt	0.195	0.192	1.311		H4 not supported
H7: Perceived Financial Stability → Intention to Adopt	0.263	0.000	3.925		H7 supported
H3: Perceived Ease of Use → Perceived Usefulness	0.411	0.000	3.838	0.501	H3 supported
H5: Perceived Value → Perceived Usefulness	0.387	0.003	3.033		H5 supported
H10: Interorganizational Trust → Perceived Usefulness	0.184	0.003	3.037		H10 supported
H6: Perceived Ease of Use → Perceived Value	0.465	0.000	7.631	0.521	H6 supported
H9: Interorganizational Trust → Perceived Value	0.163	0.000	4.184		H9 supported
H8: Interorganizational Trust → Perceived Ease of Use	0.318	0.000	6.580	0.247	H8 supported

Note: N=134

Discussion

Conclusions

As shown in Table 2, all hypotheses are supported with the exception of hypotheses 2 and 4. Despite this, the model is overall well supported. While perceived ease of use and perceived usefulness did not have direct effects on intention to adopt, they did influence perceived usefulness. Subsequently, perceived usefulness was the strongest determinant of intention to adopt. Therefore, the effects of both perceived ease of use and perceived value on intention to adopt are fully mediated by perceived usefulness (Baron & Kenny, 1986). While the ease of use and value are still important factors, the perceived usefulness of the new technology is the most important factor for managers. Furthermore, perceived financial stability played an important role in the adoption scenario. This aligns with the theory that larger and more financially sound firms will be more likely to adopt a new technology (Davila et al., 2003).

As expected, interorganizational trust has a positive influence on perceived ease of use, perceived usefulness, and perceived value. Although these three variables are all representations of the buying manager's perceptions, it is clear that he/she is influenced by the relationship with his/her technology supplier. This indicates that not only is a trusting relationship important for a supplier, but it may also alter the view a buying manager has of a new product. Given this finding, it is important to note that disruptive technologies do not directly build off of the previous generation of technology (Danneels, 2004). Therefore, while buyers may develop trust with a firm while using a previous

generation of technology, the results here indicate that the buyer will actually carry over that trust and apply to their perception of the supplier's next, disruptive technology.

Based on our results, this study makes several contributions. First, it links the adoption of disruptive technology to interorganizational trust. We show that while perceptions of the technology's ease of use, usefulness, and value drive a buyer's intention to adopt, these variables are dependent on how much they trust their technology supplier. This illustrates that the buyer's perceptions of the new technology may not be completely objective and may in fact be influenced by their relationship with their supplier. This appears to go against the view that adoption decisions within an industrial context are primarily driven by strategy and economics (Pires & Aisbett, 2003; Davila et al., 2003). Instead, this illuminates the need to include behavioral concepts within industrial models.

Second, this article provides an additional point of view to the disruptive innovation literature. While Christensen (1997) initially found that newer entrants tended to have more success with disruptive technologies than incumbents, subsequent research has found that incumbents have, on occasion, also been successful with a variety of disruptive technologies (Danneels, 2004). For example, Charles Schwab, the incumbent, made a successful jump into online trading in the late 1990's, thereby overtaking the newer entrant, E*TRADE (Cohan, 2000). The most commonly found explanation for these exceptions is that the incumbents ultimately have more resources and, on occasion, they do not fall prey to inertia (King & Tucci, 2002). However, our findings offer another possible explanation. As we find that interorganizational trust can influence a buyer's

intent to adopt, it can be implied that incumbent firms who succeed with disruptive technologies may be able to do so with the help of their pre-existing relationships. As has been found in previous literature, interorganizational trust is often formed by shared interactions and past behaviors (Seppanen et al., 2007; Zaheer et al., 1998; Ganesan, 1994). In other words, the development of interorganizational trust takes time. Because of this, the buyer will generally have higher levels of trust with the incumbent and therefore the incumbent will be more able to reap the benefits of their established trust with the buyer.

Managerial Implications

Our results suggest that interorganizational trust is an important factor in the adoption of disruptive technologies. This illustrates the need for suppliers of disruptive technologies, such as SaaS, to not only highlight the benefits of the new technology, but also aim to develop a trusting relationship with the potential buyer. Although industrial, technology adoption scenarios are generally driven by objective strategy and financial considerations, buying managers can ultimately be swayed by trusted suppliers. For buyers, these findings may be a point of concern. An incumbent supplier who is successful with one technology may not necessarily be successful with the next, disruptive technology. A classic example of this is Kodak's failure to make the jump from traditional cameras into digital cameras (Lucas & Goh, 2009). Despite this, buyers'

perceptions of a new, disruptive technology may still be influenced by their pre-established trust with that supplier.

For incumbents, this implication highlights the need to continue developing relationships with buyers. Although smaller, more flexible entrants may reap the benefits of a first mover advantage with disruptive technologies, the incumbent may be able to use their pre-existing relationships to maintain their customers as they transition to new, disruptive technologies. For new entrants, the findings from this article highlight the need to focus not only product development, but also on relationship building with their prospective buyers. Finally, these findings should encourage entrants and incumbents alike to realize their potential shortcomings and seek out alliances. Although new entrants are more likely to first develop a disruptive technology, the capabilities of incumbents may play the role of an equalizer during the technologies emergence. Therefore, strategic alliances may be the most attractive option for both types of firms. Incumbent pharmaceutical firms, for example, have been able to maintain their relative positions in their industry by engaging in alliances with start-up biotech firms. The incumbents benefit from the breakthrough technology while the entrants benefit from the sales experience, brand reputation, and networks already developed by the incumbents (Rothaermel, 2001). Considering the role interorganizational trust plays in the adoption scenario, these alliances seem to make sense.

Limitations and Directions for Further Research

This article has a few limitations that should be addressed. First, only interorganizational trust is operationalized. Other varieties, such as interpersonal trust, may be useful for gaining a deeper understanding of the role of trust within an adoption scenario. Second, it may have been useful to collect information on respondents who were either not considering the adoption of SaaS or had halted their use of SaaS. While this study had a mix of respondents who had already deployed SaaS along with others who had not, all of those who were surveyed were at least interested in integrating SaaS. Future research may want to take a look at respondents who were not interested at all in integrating SaaS. Third, it may be interesting to compare the interorganizational trust levels of incumbents and new entrants both before and after the adoption scenario. Now that the role of interorganizational trust in an adoption scenario has been established, it would be interesting to see how successful new entrants are in developing interorganizational trust. If so, how long would it generally take the new entrant to match the trust levels of the incumbents? Perhaps by viewing the adoption of disruptive technologies both before and after adoption, and across incumbents and new entrants, a more complete picture of this process could be revealed.

CHAPTER 3.

ESSAY 2: HOW BUYER-SUPPLIER RELATIONSHIPS CAN LEAD TO LOW QUALITY ADOPTION STRATEGIES FOR DISRUPTIVE TECHNOLOGIES

Abstract

This article focuses on the antecedents of a quality adoption decision of a disruptive technology. Understanding how to make a quality adoption decision, as measured by continuance attitudes and behaviors towards the product, is of critical importance for a buying manager considering a disruptive technology. Given this challenge, a model for quality adoption decisions is proposed that considers the following precursors: interorganizational trust, mimetic competitor pressures, normative supplier pressures, efficiency motives, IT capabilities and searching efforts. This model was tested using survey results from 174 recent purchasing managers of a cloud computing service, an emerging disruptive technology. Interestingly, increased normative pressures from supplying firms led to a lower quality adoption decision. Moreover, these pressures were driven by pre-adoption levels of interorganizational trust and mimetic pressures from competitors. Potential adopting managers of a disruptive technology should instead be driven by efficiency motives and actually aim to increase their searching efforts in order to make an optimal adoption decision. These findings add to the prior literature that has demonstrated the complex influence of strong interorganizational relationships on firm performance. The implication from this finding suggests that relying too heavily on a

strong, pre-existing interorganizational relationship can be detrimental for an adopter of a disruptive technology.

Introduction

Considering the ever growing speed of innovation, product adoption has become an increasingly complex decision for any marketing manager. While there has long been a focus in both theory and practice on the antecedents of product adoption, there has been significantly less research that has taken a more in-depth look at the antecedents of quality decision making in an adoption scenario (Bhattacherjee, 2001). How does an IT manager know that the technology he/she is buying will provide the correct solution for their current issue? Furthermore, how does the buying manager know that he/she is adopting the ideal technology that will be used continuously by his/her firm and prove to be a fruitful investment?

For managers looking to adopt an incremental technology, as opposed to a radical or disruptive technology, these questions should be relatively easy to answer. By definition, an incremental technology should only have slight improvements or adjustments compared to the current technology and, therefore, should require less new knowledge to be taken in by the users (Dewar & Dutton, 1986). Disruptive and radical technologies, on the other hand, require the user to adopt new usage patterns and therefore take on new knowledge. These types of innovations often introduce consumers to new features not seen in previous generations, thus requiring the user to spend extra time and effort

learning how to use the technology (Dewar & Dutton, 1986; Christensen, 1997). In the case of disruptive innovations, the new technology eventually displaces the old technology, thereby providing a competitive advantage to firms who adopted the disruptive technology early on (Christensen, 1997). Therefore, firms should be motivated to adopt a disruptive technology early on and train their employees on the new technology before their competitors are able to do so.

However, as noted by Doering & Parayre (2000), identifying a technology as disruptive before it has displaced the preceding technology can be extremely difficult. "Significant emerging technologies are easily seen after the fact, and companies are then congratulated or castigated for their decisions to pursue them or ignore them. But rarely are the winners clear at the outset" (Doering & Parayre, 2000, p. 75). Managers, therefore, must have the ability to decide which technologies are in fact disruptive and move quickly to adopt them before they have fully emerged (Danneels, 2004). A firm that adopts the wrong technology, or no new technology at all, may be left at a disadvantage compared to competitors who have successfully integrated the emerging, disruptive technology (Christensen, 1997; Tellis, 2006). Given the risk/reward trade-off inherent in disruptive technology adoption, this study aims to identify the antecedents of a quality adoption decision of a disruptive technology.

In high risk and uncertainty scenarios, such as the potential adoption of a disruptive technology, firms often turn to trusted suppliers (Van de van et al., 1976; Katz & Tushman, 1979; Karahanna et al., 1999). By doing this, the potentially buying firm is mitigating some of their risk and uncertainty (Ganesan, 1994). In fact, much of the

previous literature has noted that a trusting, highly developed buyer-supplier relationship offers competitive advantages and lowered transaction costs for the buying firm (Morgan & Hunt, 1994; Zaheer et al., 1998; Jeffries & Reed, 2000). For firms adopting incremental technologies, these apparent advantages should provide motivation for building strong vendor relationships and staying with trusted suppliers. However, as argued in this article, a strong buyer-suppler relationship may have a converse effect on adopters of disruptive technologies. Strong, interorganizational relationships tend to reduce buyers' motivations to search for and negotiate for the ideal product and price and, instead, lead them to simply rely on their most trusted suppliers (Jeffries & Reed, 2000). Furthermore, very high levels of trust in a supplier could lead that supplier to become opportunistic (Grayson & Ambler, 1999; Atuahene-Gima & Li, 2002). We argue that, since disruptive technologies tend to be difficult to predict and properly understand, a more extensive searching effort is required to make a high quality adoption decision. This point is highlighted by the finding that the majority of firms that introduce disruptive technologies tend to be new entrants to the industry, not incumbent firms who have developed long-term relationships with their customers (Henderson, 1993; Christensen, 1997). As such, the ideal supplier of a disruptive technology may be a supplier that the buyer does not have an existing relationship with.

In order to illustrate this argument, this article proposes the following variables as precursors of a quality adoption decision for a disruptive technology: interorganizational trust, efficiency motives, normative supplier pressures, mimetic competitor pressures, information technology (IT) capabilities and searching efforts. We propose that

normative pressures, as brought on by suppliers, will have a negative influence on adoption decision quality and will be driven by interorganizational trust (trust between a buying manager and a supplier of disruptive technology). Conversely, we suggest that firms should adhere to efficiency motives, increase their searching efforts, and develop IT capabilities to lead them towards a high quality adoption decision. As such, we argue that searching efforts should be viewed positively in this scenario while interorganizational trust should be viewed negatively, thus contradicting previous views of these constructs (Whetten & Cameron, 1991; Zaheer et al., 1998; Jeffries & Reed, 2000).

Combining the aforementioned construct relationships, the goal of this article is to provide a holistic model that explores both the positive and negative antecedents of a high quality adoption decision for a disruptive technology. This model is tested empirically using 174 buyers of cloud computing technology, which has been identified as an emerging disruptive technology (Marston, et al. 2011). Moving forward, this article will provide an overview of the literature on disruptive technology, product adoption, continued usage behaviors and attitudes, and interorganizational trust. Next, we will propose our hypotheses, empirically test our model and provide relevant results. Finally, the article will conclude with a discussion of the results, the managerial implications and concluding remarks.

Background Literature

Disruptive Technology

Introduced in 1997 by Clayton Christensen in *The Innovator's Dilemma*, the concept of disruptive technology has become a popular topic in both academic circles and mainstream press in recent years. According to Christensen (1997), disruptive technologies generally underperform upon their initial release as they tend to fall short of the dominant technology on the product dimensions that are most valued by mainstream customers. However, disruptive technologies tend to exceed the capabilities of dominant technologies on a few dimensions that are appealing to a few fringe customers. Further, these disruptive technologies tend to be lower priced upon their initial release and are thus appealing to more price-sensitive customers (Govindarajan & Kopalle, 2006). As the disruptive technology improves over time, it gradually outgrows the emerging market it began in and starts capturing the attention of mainstream customers. Eventually, the disruptive technology displaces the dominant technology within the mainstream market and, as a consequence, the fringe customers who adopted the disruptive technology displace the mainstream customers who stayed with the previously dominant technology (Christensen, 1997; Tellis, 2006).

However, determining which technologies are disruptive can be a difficult task while the technology is still emerging. Many potentially disruptive technologies fail and, unfortunately, predicting the success of very young technologies can be quite difficult

(Danneels, 2004). During the early life stages, many radical new technologies may appear to be disruptive. A radical technology is defined as a product that represents a clear departure from existing practices and requires the user to take on a vast amount of new knowledge (Dewar & Dutton, 1986). However, the "disruptiveness of innovations is distinct from the radicalness or the competency-destroying dimensions of innovation" (Govindarajan & Kopalle, 2006, p. 190). Radical technologies tend to be initially targeted to opinion leaders within mainstream markets while disruptive technologies initially target niche audiences. Over time, however, these disruptive technologies tend to improve in quality and steal business from previously mainstream products (Adner, 2002). For example, Canon was able to break into the mainstream market in the late 1970s and 1980s by creating smaller and more inexpensive copiers than Xerox. Initially, Canon copiers were too slow for bigger businesses. However, as the quality and speed of the copiers improved, larger businesses began switching from Xerox copiers to the cheaper and more flexible Canon products (Govindarajan & Kopalle, 2006). For adopting managers, the decision to switch from an expensive incumbent (e.g. Xerox copier) to a cheaper and more nimble new entrant (e.g. Canon copier) can be a difficult but important decision. Identifying and adopting a disruptive technology early on can provide a niche firm with the chance to catch up to their mainstream competitors (Christensen, 1997; Tellis, 2006). Furthermore, staying with the fading mainstream product over the emerging disruptive technology can be costly (Danneels, 2004).

This difficult decision presents a unique risk for potentially adopting managers. Adopting managers not only take a chance on an unproven product, but must also be able

to abandon their previous technologies as well as the processes and strategies associated with them. Often times, this adoption of new technologies, new strategies and new methodologies, are met with reluctance by the employees of the adopting firm (Lyytinen & Rose, 2003). In order to alleviate this risk and uncertainty, potentially adopting firms may turn to their trusted suppliers as the existence of a trusting relationship can reduce perceived risk, thereby increasing the likelihood of adoption (Ganesan, 1994; Pavlou, 2003; Obal, 2013). These trusting relationships are most often found in long-term relationships with incumbent firms (Ganesan, 1994; Doney & Cannon, 1997; Poppo et al., 2008).

However, while risk reduction may be desirable when considering the adoption of a disruptive technology, relying on an incumbent may not be an appropriate strategy. In fact, one of Christensen's (1997) main contributions was the discovery that new entrants tend to have more success with the emergence of disruptive technologies than incumbents. By definition, a firm is considered an incumbent "if it manufactured or sold products that belonged to the previous product generation on the introduction date [of the disruptive technology]" (Chandy & Tellis, 2000, p. 7). Firms that did not produce or sell the previous generation of a given product class are considered new entrants. Henderson (1993) found that incumbents tend to invest more in incremental innovations that build off of their previous products while new entrants were more likely to invest in radical innovations. She explains that larger, incumbent firms may be saddled by their assets, therefore reducing the efficiency of their attempts at radical innovation. Furthermore, incumbent firms have likely already developed effective routines for handling their

customers, therefore leading to organizational inertia (Henderson, 2006). As such, refocusing their efforts on disruptive innovations would require the incumbent to undertake major changes that do not build upon their current strengths. Conversely, new entrants are not constrained by prior competencies and routines and are more able to take advantage of technological opportunities (Tushman & Anderson, 1986). Therefore, it is often assumed that the adaptability and lack of desire to build off of previous technologies benefits new entrants who are interested in developing disruptive innovations (Danneels, 2004). Certainly, as noted by King & Tucci (2002), there are exceptions where incumbent firms thrive in the face of emerging disruptive technologies. However, in most cases, "incumbents fail in the face of disruptive technology" (Danneels, 2004, p. 252). Superficially, this regular failure by incumbent firms seems to illustrate a potential downside to relying on pre-existing relationships to reduce the perceived risk associated with disruptive technology adoptions. Previous buyer-supplier relationships may increase adoption rates of new products, but very often have little to do with post-adoption attitudes and beliefs (Karahanna et al., 1999). To borrow from the previous example, a firm in the early 1980s may have felt less perceived risk by staying with Xerox (the incumbent), but in turn, they may have missed out on a more appropriate and cost-effective product offered by Canon (the new entrant) (Govindarajan & Kopalle, 2006).

Product Adoption and Continued Usage Behaviors and Attitudes

Much of the previous literature on product adoption has focused on the drivers of product acceptance and subsequent adoption. However, from the buyer's perspective, it is arguably more important to focus on the drivers of continued usage and participation with the adopted product. Products that are adopted for the wrong reasons run the risk of being underused by the adopting firm. According to Klonglan & Coward (1970), sociological variables are generally more influential in the initial adoption phase, but economic variables better explain continued usage of a new product. Karahanna et al. (1999) found that normative pressures were the primary driver of adoption intention whereas personal attitudes toward the new product, such as perceived usefulness, were the primary drivers of continued usage. In fact, perceived usefulness appears to be a unique construct in that it can successfully predict adoption and continued usage (Davis et al., 1989).

Prior research has found that while legitimacy-oriented motives predicted adoption, efficiency-orientated motives were more effective in determining continued usage (Grewal et al., 2001; Son & Benbasat, 2007). A firm that is adhering to efficiency-oriented motives would adopt an information technology that best fit its economic efficiency rationales, while a firm that adheres to legitimacy-oriented motives would adopt an information technology that has been adopted by other organizations, thus legitimizing their decision and subsequently minimizing their search efforts (Malone, 1987). As explained by Grewal et al. (2001), firms driven to reduce operational costs and

improve productivity are following efficiency motives. However, finding the most economically efficient product (one that maximizes utility and minimizes costs) may require significant searching time and effort and highly developed information technology (IT) capabilities (Grewal et al., 2001). In fact, previous research has noted that information systems projects are more likely to fail when the firm lacks sufficient IT capabilities (Ewusi-Mensah & Przasnyski, 1991; Reich & Benbasat, 1990). Jeffries & Reed (2000) explain that buyers are more likely to find the ideal product when all options are considered, giving credence to long searches in which an abundance of information is exchanged. "The quality of solutions to problems of adaptation depends upon how motivated and diligent negotiators are in exploring all possible (boundedly rational) options. When all options have been considered and the final solution that is selected maximizes gains for the contracting parties, then the solution is Pareto optimal." (Jeffries & Reed, 2000, p. 875).

Conversely, Son & Benbasat (2007) found that while two specific legitimacy-orientated motives, mimetic pressures from competitors and normative pressures from suppliers and other industry sources, led consumers to adopt a new technology, they did not lead to continued usage of that technology. Considering the investment necessary for adopting a disruptive technology, a poor adoption decision, in which product usage decreases, could have detrimental implications (Christensen, 1997; Tellis, 2006). Mimetic competitor pressures occur when multiple organizations within a competitive environment take the same action, such as adopting a new software system, thereby increasing the pressure on a given organization to mimic these actions (Abrahamson &

Rosenkopf, 1993). Mimetic competitor pressures have been found to cause a bandwagon effect in industries where non-adopting firms may eventually adopt a new product out of fear of being left behind by competitors (Abrahamson & Rosenkopf, 1993). Normative pressures are those felt by a given organization to meet the values and norms of the other members of their given social network, such as suppliers and trade association members (Deephouse, 1996). Normative pressures have been found to reduce the inherent risk associated with adopting a new product and, subsequently, encourage the buying firm to adopt a new product (Karahanna et al., 1999; Teo et al., 2003). However, as suggested by Son & Benbasat (2007), consumers who succumbed to normative supplier pressures and mimetic competitor pressures when making an adoption decision were much more likely to discontinue use of that technology, thereby wasting their initial investment. Ke et al. (2009), note that normative pressures are transferred through interorganizational channels, including channels between a buyer and supplier, and they are driven by non-mediated powers. These non-mediated powers include views that the supplier holds similar values to the buyer, is experienced and knowledgeable, and generally provides useful information to the buyer. Interestingly, trust between a buyer and supplier, or interorganizational trust, is also driven by non-mediated powers (Ke et al., 2009).

Interorganizational Trust

Previous literature has shown that long-term, interorganizational relationships are built on mutual trust (Morgan & Hunt, 1994; Jeffries & Reed, 2000). Trust is defined as

"a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behaviors of another" (Rousseau et al., 1998, p. 395). More specific to B2B relationships, interorganizational trust refers to the trust placed upon a supplier organization by the members (e.g. employees) of the buyer organization (Zaheer et al., 1998). It has been found that trust is developed when a buyer views the firm or salesperson as honest, reliable, consistent, and trustworthy (Doney & Cannon, 1997). According to Morgan & Hunt (1994), trust and relationship commitment are the key components to building cooperative relationships between customers and firms. Ultimately, interorganizational trust is seen to be driven by both the predictability of a trustor's expectations about an organization's behavior and the confidence in an organization's goodwill – otherwise referred to as credibility and benevolence (Doney & Cannon, 1997).

Generally, interorganizational trust has been viewed as important for the success of interfirm relationships (Jeffries & Reed, 2000). It has proven to lead to positive outcomes such as competitive advantage, improved performance, perceived risk reduction and satisfaction (Zaheer et al., 1998; Pavlou, 2002). Interorganizational trust can lead to efficient transactions by reducing transaction costs (Bradach & Eccles, 1989), can reduce opportunism and can promote cooperation (Morgan & Hunt, 1994).

However, research has also shown that while interorganizational trust is necessary, too much of it can actually be just as bad as too little of it. Extraordinarily high levels of trust between organizations will actually lead to reduced motivation for the negotiating employees, thus leading to lower quality solutions and suffering firm performance,

especially for the buyer (Jeffries & Reed, 2000). Furthermore, Whetten & Cameron (1991) found that a moderate level of conflict will actually lead to higher quality decisions and improved outcomes. This coincides with Halpern (1994), who found that in negotiation scenarios, friends who trust each other will avoid conflict and agree on commodity prices without attempting to negotiate that price. Interestingly, too much trust with a service provider may increase levels of opportunism and lead to decreased performance for the buyer (Grayson & Ambler, 1999; Atuahene-Gima & Li, 2002). As noted by Wuyts & Geyskens (2005), managers should prefer moderately close supplier relationships over extremely close partnerships. They found that partner opportunism is at its highest in very close relationships and at its lowest in moderately close relationships. These discoveries come in contrast to the beliefs that high levels of interorganizational trust lead to reduced transaction costs (Bradach & Eccles 1989) and increased firm performance (Zaheer et al., 1998).

Theory and Hypotheses

This article proposes a new model (as seen in Figure 2) identifying the antecedents of a quality adoption decision for disruptive technologies. In order to develop this model, we consider the B2B adoption and usage literature (Klonglan & Coward, 1970; Karahanna et al., 1999; Grewal et al., 2001; Son & Benbasat, 2007) and the interorganizational relationship literature (Morgan & Hunt, 1994; Zaheer et al., 1998; Jeffries & Reed, 2000; Pavlou, 2002) across the Management, Marketing, and MIS

disciplines. Specifically, this study develops a model utilizing interorganizational trust (Zaheer et al., 1998), the antecedents of post-adoption usage, as described by Grewal et al. (2001 and Son & Benbasat (2007), and the expectation-confirmation model established by Bhattacherjee (2001). First, given the contradictions in the interorganizational trust literature, it is important to explore the role of interorganizational trust on buyer use continuance and satisfaction with a disruptive technology. Interorganizational trust is defined as the amount of trust an individual, or individuals, from a buying organization places in the supplying organization (Zaheer et al., 1998). Most of the previous literature has adhered to the idea that strong interorganizational relationships and buyer-supplier trust will have a positive relationship with firm performance (Zaheer et al., 1998; Pavlou, 2002). However, this finding generally refers to the influence of interorganizational trust on transaction speeds and negotiation efficiency. It is true that increased interorganizational trust can lead to more efficient transactions and increased product adoption (Morgan & Hunt, 1994; Pavlou, 2003; Obal, 2013). As noted by Gulati and Nickerson (2008), pre-existing levels of interorganizational trust will lead to less haggling over costs and quicker resolutions to negotiations. Buying firms who exhibit high levels of interorganizational trust with a given supplier will be more likely to purchase from that supplier with little motivation for negotiation (Jeffries & Reed 2000; Bradach & Eccles, 1989). Instead, there is a tendency in these situations for a buyer to take the first acceptable solution they encounter rather than searching for the best answer (March & Simon, 1958).

We postulate that this influence of trust drives normative supplier pressures. As previously noted, normative pressures are those pressures felt by organizations to conform to the norms of the industry (Son & Benbasat, 2007). As noted by Benders et al. (2006), these norms are generally controlled and driven by established organizations within the industry, such as suppliers. Increased levels of interorganizational trust can lead to increased opportunism by the supplier and reduced motivation by the buyer to negotiate (Grayson & Ambler, 1999; Jeffries & Reed, 2000; Atuahene-Gima & Li, 2002). Given these findings on supplier opportunism, we specifically focus on the normative pressures introduced by supplying firms, thus separating these pressures from those felt by other industry sources. We expect that buyers who highly trust their suppliers are more likely to give in to industry norms. Therefore, we hypothesize the following:

Hypothesis 1. Pre-adoption interorganizational trust will have a positive influence on normative supplier pressures.

As previous literature has found, mimetic competitor pressures may also play a role in the adoption scenario (Benders et al., 2006; Son & Benbasat, 2007). Mimetic competitor pressures are those pressures brought on by uncertainty that encourage buying managers to imitate the decisions of leading competitors (Benders et al., 2006). As noted by Abrahamson & Rosenkopf (1993), mimetic competitor pressures can lead to a bandwagon effect in which non-adopters may fear appearing different from adopters and therefore may decide to adopt a new product or technology. We hypothesize that, as these

mimetic competitor pressures increase, the norms of the industry will change. Furthermore, opportunistic suppliers of the new technology may take advantage of these heightened mimetic competitor pressures to highlight the urgency of adopting their disruptive technology. Therefore:

Hypothesis 2. Mimetic competitor pressures will have a positive influence on normative supplier pressures.

As argued by Jeffries & Reed (2000), high quality solutions are uncovered when all solutions have been considered. Therefore, searching efforts play an important role in the adoption of disruptive technologies. As noted by Grewal et al. (2001), firms that allocate time and effort to understand a product and environment are likely to substantially benefit from their efforts. These benefits are driven by efficiency-oriented motives (Grewal et al. 2001). In this study, efficiency motives are defined as the organizational drive to adopt a new technology "based on the rationalistic expectation of enhancing efficiency of their processes" (Son & Benbasat, 2007, p. 58). In other words, firms driven to adopt a new technology by efficiency motives are more focused on finding the right product instead of succumbing to pressures from suppliers or competitors, therefore providing a contrast to mimetic competitor pressures and normative supplier pressures. Extending Grewal et al. (2001), we believe that the motivation to find the right product drives the adopting firm to undertake additional searching efforts. Searching efforts, in this study, are defined as the "effort aimed at acquiring information from the external environment" (Srinivasan and

Ratchford, 1991, p. 235) for the purposes of a specific purchasing decision. We hypothesize that:

Hypothesis 3. Efficiency motives will have a positive influence on searching efforts.

Defining a high quality decision can be a difficult and a somewhat subjective task. Most literature looks at continued usage as an indicator of a quality adoption decision. Continued usage is defined as the amount a technology is used in everyday work procedures after the initial adoption event (Grewal et al., 2001; Son & Benbasat, 2007). According to the Theory of Reasoned Action (TRA), specific behaviors can be determined by behavioral intention which is determined jointly by an individual's attitude and subjective norms (Fishbein & Ajzen, 1975). Specific to product adoption, Karahanna et al. (1999) found that subjective norms did not determine behavioral intent; only attitude towards the product, as determined by perceived usefulness, was of significance. Perceived usefulness is defined as the "prospective user's subjective probability that using a specific [technology] will increase his or her job performance within an organizational context" (Davis et al., 1989). Alongside perceived usefulness, Bhattacherjee (2001) found satisfaction with the product and confirmation of expectations to also be drivers of continuance intention. Therefore, in order to capture both behavior and attitude, we operationalize a quality adoption decision by measuring perceived usefulness, satisfaction, confirmation, continuance intention (attitude), and continued usage (behavior). Satisfaction is defined as "the summary psychological state

resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience" (Oliver, 1981, p. 29). According to Bhattacherjee (2001, p. 354), confirmation is the "affective state related to and resulting from a cognitive appraisal of the expectation-performance discrepancy." Finally, continuance intention is defined as a user's intended behavior to continue using a product in the future (Bhattacherjee, 2001).

As indicated by Jeffries & Reed (2000), quality solutions are found when motivation is high and when all solutions have been considered. In order to determine all possible adoption solutions, searching efforts will likely be high. Similarly, Rowley, Behrens & Krackhardt (2000) note that when firms are operating in highly explorative environments, interacting with a wide variety of weakly linked vendors will improve firm performance. This is especially true in non-routine buying decisions, such as the adoption of a disruptive technology, where careful consideration should be given to all alternatives. As shown by Son & Benbasat (2007), individuals may use legitimacy-oriented motives to minimize search efforts. Not surprisingly, these motives were also found to lead to lower quality adoption solutions. As found by Broadwell (1972), economizing on the use of search time can negatively influence the quality of the subsequent solution. In this scenario, the low quality decision occurs because the buyer fails to consider all possible solutions. Instead, adopters who allocate time to understand the benefits of a specific technology will experience substantial benefits compared to those who do not (Grewal et al., 2001). Therefore:

Hypothesis 4. Searching efforts will have a positive influence on the quality of the product adoption decision as measured by (a) perceived usefulness, (b) continued usage, (c) continuance intention, (d) satisfaction, and, (e) confirmation.

As explained by Son and Benbasat (2007), legitimacy-oriented motives, such as mimetic and normative pressures, may lead to more adoptions, but will not lead to increased, continued usage of said adopted product. "If the decision to adopt…is primarily driven by legitimacy-oriented motives…the investment necessary for initial adoption may be wasted." (Son & Benbasat, 2007, p. 86). Similarly, Karahanna et al. (1999) found that while normative pressures were the primary driver of adoption intention, these pressures did a poor job of determining whether or not the technology would be continued to be used. Firms that adhere to mimetic and normative pressures often do so in order to legitimize their decisions while at the same time minimizing the costs associated with searching for alternatives (Grewal et al., 2001). This is relevant to product adoption decisions where buyers often have the alternative to purchase products in different volumes, at different prices, and even from different suppliers. However, when mimetic competitor pressures and normative supplier pressures are strong, these buyers will instead prefer to minimize search efforts. Therefore, we hypothesize the following:

Hypothesis 5. Mimetic competitor pressures will have a negative influence on the quality of the product adoption decision as measured by (a) perceived usefulness, (b) continued usage, (c) continuance intention, (d) satisfaction, and, (e) confirmation.

Hypothesis 6. Normative supplier pressures will have a negative influence on the quality of the product adoption decision as measured by (a) perceived usefulness, (b) continued usage, (c) continuance intention, (d) satisfaction, and, (e) confirmation.

Next, Klonglan & Coward (1970) found that continued usage of an adopted product was more likely to occur when the adopting firm was driven by economic considerations (e.g. purchasing the product that maximized utility and minimized cost). Karahanna et al. (1999) found that perceived usefulness was the prime determinant of attitude towards using information technology, thus leading to the behavioral intention of continued usage. Further research built off of these findings to establish that efficiency motives were more predictive of continued usage than legitimacy-oriented motives (Grewal et al., 2001; Son & Benbasat, 2007). Therefore:

Hypothesis 7. Efficiency motives will have a positive influence on the quality of the product adoption decision as measured by (a) perceived usefulness, (b) continued usage, (c) continuance intention, (d) satisfaction, and, (e) confirmation.

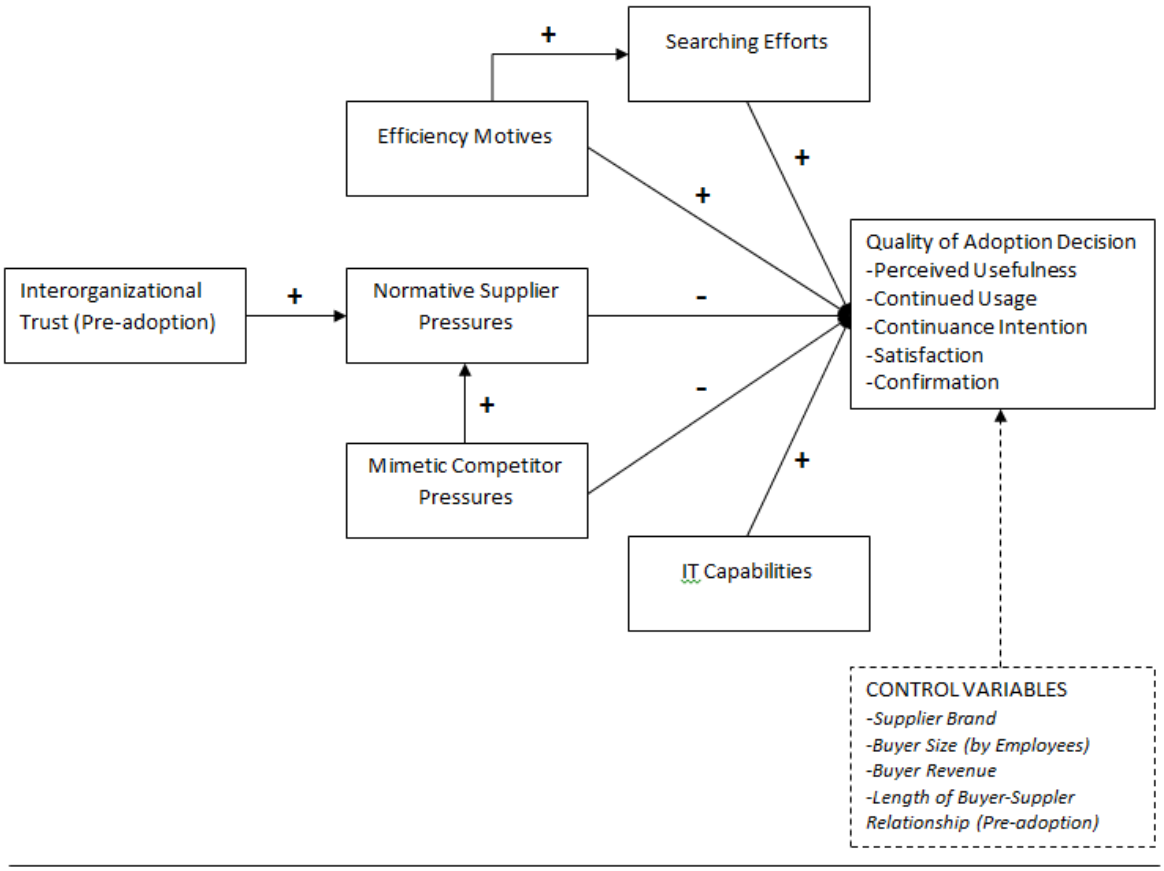
Finally, Grewal et al. (2001) found that a firm's continued participation in an electronic market was driven by that firm's IT capabilities. Firms with higher IT

capabilities were more likely to become experts in using an electronic market while firms with lower IT capabilities were more likely to be only passive users of that service (Grewal et al., 2001). As noted by Ewusi-Mensah & Przasnyski (1991), firms undertaking a new information technology project are likely to fail if they have not already established their internal IT capabilities. These findings extend previous literature that links the success of IT projects to the technical abilities of the firm (Reich & Benbasat, 1990). Therefore, applying these findings to disruptive technology, we hypothesize that:

> **Hypothesis 8.** IT capabilities will have a positive influence on the quality of the product adoption decision as measured by (a) perceived usefulness, (b) continued usage, (c) continuance intention, (d) satisfaction, and, (e) confirmation.

Given the aforementioned hypotheses, the following conceptual model is presented.

Figure 2. Conceptual Model



Methodology

Sample and Data Collection Procedures

In order to empirically test our model, a survey of 188 recent adopting managers of cloud computing packages was conducted. These packages could include Software-as-a-Service (SaaS), Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), or any other similar package. As noted by Marston et al. (2011), "cloud computing today shows

all the characteristics of a disruptive technology." True to the concept of disruptive technology, "many of the innovative services that will be developed on the cloud will soon make many cloud computing applications functionally richer than their in-house counterparts." Cloud computing appears to satisfy the generally held definition of an emerging, disruptive technology – lagging behind the dominant technology on mainstream values, exceeding the dominant technology on fringe values, popular with fringe customers, slowly increasing in popularity amongst mainstream customers, and, potentially, displacing the dominant technology – in-house software applications (Tellis, 2006; Marston et al., 2011).

Respondent data was collected through a private market research firm that offers access to over 7 million respondents and enables users to carefully define the demographics of their desired panel prior to data collection. 511 IT and innovation managers were initially contacted; entry level employees were not contacted. 214 of those managers had adopted some form of cloud computing sometime from 6 months to 2 years prior to taking the survey. 188 respondents had personally participated in the purchasing decision, thus providing a response rate of 36.8%. After gathering responses, 14 respondents were removed due to improper completion of the survey (e.g. missing answers, survey completed too quickly), bringing the final sample size to 174 responses. As the conceptual model consists of 6 predictive variables (pre-adoption interorganizational trust, mimetic competitor pressures, normative supplier pressures and efficiency motives, searching efforts, and IT capabilities), this sample size is more than sufficient in order to measure medium sized effects at $p<.05$ (Cohen, 1992). Within the

final sample, 68 respondents had embarked on new buyer-supplier relationships by purchasing a cloud computing package while 106 relationships existed prior to adoption. The average firm size was approximately 1,878 employees and the average annual revenue was $140 million. The majority of respondents were employed by small and medium sized enterprises; only 8 respondents reported annual revenues above $1 billion. Microsoft was the most popular vendor, followed by Oracle, Salesforce.com, Amazon, and SugarCRM.

Measures

The survey consisted of fifty-six items, fifty of which aimed to capture the constructs of interest and six of which aimed to capture firm demographics. Of the six demographic items, two items were used to screen out respondents whose firms had not yet adopted cloud computing or respondents who did not personally participate in the adoption decision. The other four demographic items were used as control variables; supplying firm; buying-firm size (by employees), buying-firm revenue, and length of buyer-supplier relationship previous to adoption of cloud computing technology (measured in months). The supplying firm variable was measured by specifically asking respondents who their cloud computing supplier was – Microsoft, Oracle, Salesforce.com, SAP, SugarCRM, Amazon, or other.

Respondents who qualified were taken to the body of the survey, of which 7-point Likert scale items were used to capture the constructs of interest. Searching efforts were

measured using three items adapted from Srinivasan & Ratchford (1991) while perceived usefulness was measured using four items adapted from Davis et al. (1989). Items measuring continued usage, normative supplier pressures, mimetic competitor pressures and firm size were all derived from Son & Benbasat (2007). Continuance intention and satisfaction were measured using items adapted from Bhattacherjee (2001), while items measuring confirmation were developed from Oliver (1980) and Bhattacherjee (2001). Efficiency motives and IT capabilities were both captured using items derived from Grewal et al. (2001). Finally, interorganizational trust was measured using six items developed from Zaheer et al. (1998), Lusch et al. (2003), and Gulati & Sytch (2008). In order to distinguish between pre-adoption and post adoption levels of trust, respondents were first asked to evaluate their current levels of interorganizational trust with their cloud computing supplier, then evaluate their level of interorganizational trust prior to the adoption decision. This technique is consistent with previous literature analyzing the adoption decision after it has occurred (O'Callaghan et al., 1992; Grewal et al., 2001). The final questionnaire can be found in Appendix A.

Measurement Model Assessment

After obtaining responses and cleaning the data, structural equation modeling was used to assess the fit of the model using AMOS 18.0. Because each variable was represented by at least three items, structural equation modelling was an appropriate methodology for this study (Kline, 2010). No items needed to be dropped. As shown in

Table 3, the model exhibited satisfactory fit (Chi-square = 1154.151; df = 842; $\chi 2$/df = 1.371; RMSEA = .046 (.039-.053); SRMR = .0415; NFI = .857; CFI = .956; IFI = .957; TLI = .951).

Table 3. Assessment of Convergent and Discriminant Validity

Construct/items	Factor Loadings	AVE	Cronbach's Alpha	Construct/items	Factor Loadings	AVE	Cronbach's Alpha
Confirmation				Normative supplier pressures			
Conf1	0.899	0.802	0.924	Norm1	0.740	0.622	0.866
Conf2	0.889			Norm2	0.819		
Conf3	0.900			Norm3	0.779		
Continuance Intention				Norm4	0.814		
Contint1	0.905	0.764	0.909	Perceived Usefulness			
Contint2	0.889			PUse1	0.918	0.784	0.939
Contint3	0.827			PUse2	0.910		
Continued Usage				PUse3	0.904		
Contuse1	0.761	0.727	0.928	PUse4	0.840		
Contuse2	0.898			Pre-Adoption Interorganizational Trust			
Contuse3	0.890			PTrust1	0.823	0.712	0.937
Contuse4	0.863			PTrust2	0.802		
Contuse5	0.843			PTrust3	0.878		
Efficiency Motives				PTrust4	0.873		
Eff1	0.834	0.670	0.890	PTrust5	0.827		
Eff2	0.815			PTrust6	0.857		
Eff3	0.838			Satisfaction			
Eff4	0.785			Sat1	0.864	0.755	0.924
IT Capabilities				Sat2	0.904		
IT1	0.885	0.794	0.920	Sat3	0.872		
IT2	0.903			Sat4	0.834		
IT3	0.885			Searching Efforts			
Mimetic competitor pressures				Search1	0.921	0.853	0.945
Mim1	0.775	0.683	0.914	Search2	0.947		
Mim2	0.867			Search3	0.903		
Mim3	0.867						
Mim4	0.828						
Mim5	0.792						
Model Fit	Chi-square = 1154.151; df = 842; $\chi 2$/df = 1.371; RMSEA = .046 (.039-.053); SRMR = .0415; CFI = .956; NFI = .857; IFI = .957; TLI = .951						

Average variance extracted (AVE) score is calculated according to Fornell and Larcker (1981) and should be greater than .5. AVE = $\Sigma(\lambda yi)2/[\Sigma(\lambda yi)2 + \Sigma Var(\varepsilon i)]$, where λ is the loading of each item.
N=174 respondents.
df, degrees of freedom; RMSEA, root mean square error of approximation; SRMR, standardized root mean residual; NFI, normed fit index; CFI, confirmatory factor analysis; IFI, incremental fit index; TFI, Tucker Lewis Index

In support of convergent validity and reliability, the average variance extracted (AVE) exceeded .5 for all variables, the Cronbach's alpha values all exceeded .7 , and all item loadings exceeded .7 (Fornell &Larcker, 1981; Kline, 2010). The inter-item correlations (available upon request) were higher within factors than the correlations across factors, thus satisfying the primary criteria for discriminant validity (Churchill, 1979). Therefore, the model exhibited satisfactory reliability, discriminant validity and convergent validity.

Common Method Bias

To assess potential common method bias, both Harman's single factor test and Lindell & Whitney's (2001) marker variable technique were applied. First, Harman's single factor test assumes that a single factor will emerge that explains the majority of the variance in our model if a significant amount of common method variance exists (Podsakoff & Organ, 1986). The factor analysis revealed eight factors with eigenvalues above 1.0, which explained 76.7% of the variance. None of the eight factors accounted for a majority of the variance. Second, as Harman's single factor test is limited by insufficient sensitivity to smaller levels of common method variance, the marker variable technique was utilized (Lindell & Whitney, 2001). Firm size, which was based on revenue estimates and the number of employees, was used as the marker variable for this test as it should be theoretically unrelated to the dependent variables in this study. Results

indicate that no statistically significant correlations existed between the variables in our theoretical model and the marker variable. Following Lindell & Whitney (2001), the second smallest positive correlation was used to estimate an indicator of common method variance (r_M = .060, p = .324). Furthermore, results indicated that the construct correlations, as reported in Appendix B, were still significant after partialing out the influence of the marker variable. Therefore, the impact of common method bias was not a serious concern in this study.

Results

The results from the structural model were used to test the hypotheses. As expected, pre-adoption interorganizational trust increased the normative supplier pressures felt by respondents (β = 0.210, SE = 0.056, p < .01), therefore providing support for hypothesis 1. Hypothesis 2 was also supported as mimetic competitor pressures increased normative supplier pressures (β = 0.506, SE = 0.069, p < .01). As a driver of searching efforts, efficiency motives were found to be positive and significant (β = 0.738, SE = 0.122, p < .01), providing support for hypothesis 3. Interestingly, searching efforts were not impacted by either mimetic competitor pressures (β = 0.123, SE = 0.081, p > .10) or normative supplier pressures (β = 0.027, SE = 0.107, p > .10).

As previously noted, the respondents' quality of adoption decision was measured using five constructs: perceived usefulness (a), continued usage (b), continuance intention (c), satisfaction (d), and confirmation (e). In order to test hypotheses 4-8, we analyzed the

influence of the predictive variables on the five constructs that constitute a quality adoption decision. Four control variables – supplier, buyer size by employee, buyer revenue, and length of buyer-supplier relationship – were tested alongside the predictive variables. All control variables were found to be not significant and were therefore dropped from the final analysis.

First, hypothesis 4 predicted that increased searching efforts by the buying firm would increase the quality of their adoption decision. As predicted, searching efforts increased perceived usefulness ($\beta = 0.224$, SE = 0.051, $p < .01$), continued usage ($\beta = 0.147$, SE = 0.045, $p < .01$), continuance intention ($\beta = 0.186$, SE = 0.060, $p < .01$), and confirmation ($\beta = 0.174$, SE = 0.049, $p < .01$), thus providing overall support for hypothesis 4. Interestingly, the influence of searching efforts on satisfaction was not significant ($\beta = -0.002$, SE = 0.048, $p > .10$).

Second, increased mimetic competitor pressures from competitors were predicted to decrease the quality of an adoption decision. Mimetic competitor pressures showed no influence on continued usage ($\beta = 0.056$, SE = 0.078, $p > .10$), and continuance intention ($\beta = 0.061$, SE = 0.106, $p > .10$). Conversely, mimetic competitor pressures showed a positive influence on satisfaction ($\beta = 0.373$, SE = 0.091, $p < .01$), perceived usefulness ($\beta = 0.318$, SE = 0.092, $p < .01$), and on confirmation ($\beta = 0.243$, SE = 0.088, $p < .01$). As the influence of mimetic competitor pressures has provided inconsistent findings, hypothesis 5 is not supported. A bootstrapping procedure with 500 replications was used to test for possible mediating relationships (Preacher and Hayes, 2008; Strizhakova et al., 2011). It was found that the influence of mimetic competitor pressures were, in some

cases, fully mediated by normative supplier pressures and had an indirect effect on perceived usefulness (β = -0.215, $p < .01$), continuance intention (β = -0.239, $p < .01$), satisfaction (β = -0.235, $p < .01$), and on continued usage (β = -0.142, $p < .01$). Interestingly, mimetic competitor pressures did not have an indirect effect on confirmation as mediated by normative pressures (β = -0.094, $p > .10$).

Third, normative supplier pressures from the supplying firm were predicted to have a negative impact on the quality of an adoption decision. As predicted, normative supplier pressures had a negative, significant influence on perceived usefulness (β = -0.425, SE = 0.118, $p < .01$), continued usage (β = -0.281, SE = 0.104, $p < .01$), continuance intention (β = -0.471, SE = 0.140, $p < .01$), and satisfaction (β = -0.464, SE = 0.118, $p < .01$), thus providing overall support for hypothesis 6. The impact of normative supplier pressures on confirmation was only weakly significant (β = -0.185, SE = 0.111, $p < .10$). Fourth, efficiency motives were hypothesized to have a positive influence on the quality of an adoption decision. Consistent support for hypothesis 7 was found as efficiency motives had a positive influence on perceived usefulness (β = 0.414, SE = 0.082, $p < .01$), continued usage (β = 0.350, SE = 0.075, $p < .01$), continuance intention (β = 0.521, SE = 0.098, $p < .01$), satisfaction (β = 0.569, SE = 0.085, $p < .01$), and confirmation (β = 0.468, SE = 0.082, $p < .01$). Finally, hypothesis 8 postulated that the IT capabilities of the buying firm would have a positive impact on the quality of adoption decision. Once again, complete support for hypothesis 8 was found as IT capabilities had a positive, significant impact on perceived usefulness (β = 0.515, SE = 0.062, $p < .01$), continued usage (β = 0.458, SE = 0.061, $p < .01$), continuance intention (β = 0.501, SE = 0.069, $p <$

.01), satisfaction (β = 0.290, SE = 0.054, $p < .01$), and confirmation (β = 0.238, SE = 0.053, $p < .01$). In sum, statistical support was found for seven out of eight hypotheses with the exception of hypothesis 5. Results for all hypothesis tests can be found on Table 4.

Table 4. Results from Structural Model

Hypothesis	**Path from**	**Path to**	**Unstandardized estimate**	**Standard errors**	***p*-value**
H1	Interorg. Trust	Normative supplier pressures	0.210	0.056	<.001
H2	Mimetic competitor pressures		0.506	0.069	<.001
H3	Efficiency Motives	Searching Efforts	0.738	0.122	<.001
H4a	Searching Efforts	Perceived Usefulness	0.224	0.051	<.001
H5a	Mimetic competitor pressures		0.318	0.092	<.001
H6a	Normative supplier pressures		-0.425	0.119	<.001
H7a	Efficiency Motives		0.414	0.082	<.001
H8a	IT Capabilities		0.515	0.062	<.001
H4b	Searching Efforts	Continued Usage	0.147	0.045	.001
H5b	Mimetic competitor pressures		0.056	0.078	.476
H6b	Normative supplier pressures		-0.281	0.104	.007
H7b	Efficiency Motives		0.350	0.075	<.001
H8b	IT Capabilities		0.458	0.061	<.001
H4c	Searching Efforts	Continuance Intention	0.186	0.060	.002
H5c	Mimetic competitor pressures		0.061	0.106	.565
H6c	Normative supplier pressures		-0.471	0.140	<.001
H7c	Efficiency Motives		0.521	0.098	<.001
H8c	IT Capabilities		0.501	0.069	<.001

Table 4. Results from Structural Model, continued

Hypothesis	Path from	Path to	Unstandardized estimate	Standard errors	*p*-value
H4d	Searching Efforts	Satisfaction	-0.002	0.048	.973
H5d	Mimetic competitor pressures		0.373	0.091	<.001
H6d	Normative supplier pressures		-0.464	0.118	<.001
H7d	Efficiency Motives		0.569	0.085	<.001
H8d	IT Capabilities		0.290	0.054	<.001
H4e	Searching Efforts	Confirmation	0.152	0.049	.002
H5e	Mimetic competitor pressures		0.243	0.088	.006
H6e	Normative supplier pressures		-0.185	0.111	.097
H7e	Efficiency Motives		0.468	0.082	<.001
H8e	IT Capabilities		0.238	0.053	<.001

N=174 respondents.

Discussion

Given our final results, this study provides radical implications for buyers of disruptive technologies. Primarily, these findings challenge the notion that interorganizational relationships have a consistently positive relationship with firm performance (Zaheer et al., 1998). Instead, the results suggest that pre-existing interorganizational trust may increase normative supplier pressures, thus leading to lower quality adoption strategies. This finding builds upon the notion that incredibly close supplier relationships can lead to opportunism and actually be detrimental to buying managers (Wuyts & Geyskens, 2005). The results also indicate that increased searching efforts, development of IT capabilities, and a focus on efficiency motives were more effective drivers of making a high quality adoption decision. Consistent with Son & Benbasat (2007), efficiency-orientated motives, and not legitimacy-oriented motives,

drove searching efforts, which in turn positively influenced the adoption quality outcomes. Simply put, buyers should avoid merely conducting business with their most trusted supplier and instead should consider all possible alternatives before deciding on not only their final supplier, but also the final product. By doing this, buyers should get closer to making the optimal adoption decision, therefore leading to continued usage and lasting attitudes of perceived usefulness towards the new product.

These findings may seem drastic and counterintuitive and should come with a few caveats. First, and most importantly, searching efforts are treated as a positive in this scenario as increased search efforts will lead potential buyers to consider all options, thus increasing the quality of their adoption decision (Jeffries & Reed, 2000). However, practically speaking, searching efforts are not generally viewed positively as they translate into lost time and money. As such, managers should take these findings into consideration as they reflect on the trade-off between searching efforts and the quality of their adoption decision. At some point, the increased searching efforts required to push an adoption decision closer to optimality will not make financial sense. Therefore, managers may eventually be enticed to accept a "good enough" adoption strategy in lieu of increased search efforts.

Second, these findings may not translate well beyond adoption scenarios. Adoption scenarios, especially those involving disruptive or radical technologies, inherently come with the increased risk of adopting the wrong product as buyers tend to be unfamiliar with all potential alternatives (Son & Benbasat, 2007). Therefore, it makes sense to reduce this risk by exploring all options, thereby increasing searching efforts. However,

in everyday operations, or in incremental technology adoptions, the risk of making the wrong decision is much lower and the desire to minimize searching efforts is much higher. In these scenarios, high levels of interorganizational trust are desirable as they will lead to reduced searching efforts and more efficient transactions (Bradach & Eccles, 1989; Zaheer et al., 1998).

Managerial Implications

The results offer several implications for managers. First, the results suggest that managers who are considering the adoption of a disruptive technology should treat that decision separately from other adoption decisions. In these scenarios, past experience with a supplier often times should not be considered relevant to the purchase of a disruptive technology. This is due to the fact that the core value of the disruptive technology is, generally, not related to the value of the previous generation of technology (Christensen, 1997; Henderson, 2006). Therefore, a successful supplier of the previous generation of technology may not be capable of producing a successful disruptive technology that would replace their old technology. For example, while the Digital Equipment Corporation was wildly successful when selling minicomputers, they faltered terribly when personal computers began taking over the market. As noted by Christensen & Overdorf (2000), Digital did not have the proper processes in place to succeed in the personal computer market.

Conversely, a new entrant may actually offer a higher quality product than an incumbent. Take, for example, Salesforce.com. Salesforce.com was founded in 1999 as a firm specializing in cloud computing (specifically, SaaS customer relationship management), a product offering that was unheard of to the general public at the time. However, as a new entrant offering a disruptive technology, Salesforce.com grew quicker than incumbents such as Microsoft or Oracle, won numerous awards for their cloud offerings, and became the largest provider of cloud-based software (Finkle, 2010). Considering the success of the new entrant in this case, it appears that a heavy reliance on a pre-existing relationship with Microsoft or Oracle could have led to a lower quality adoption decision.

Second, the findings from this article offer managers some guidance for deciding on the appropriate driving forces of their adoption decision. We have shown that normative supplier pressures can lead to a detrimental adoption decision. Mimetic competitor pressures may also have an indirect, negative effect on adoption decisions. Thus, buying firms should avoid following a bandwagon effect as this tactic will increase their chances of making a low quality adoption decision.

Instead, efficiency motives, searching efforts and IT capabilities should be emphasized. In order to emphasize efficiency motives, firms should truly gain an understanding of the available technologies' strengths, weaknesses and applicability before making a decision (Grewal et al., 2001). In order to better understand the benefits of a given disruptive technology, firms will also need to improve their IT capabilities by investing more resources into the training of employees and hiring more technical support

staff. Furthermore, the process of learning about the various alternatives is likely to be lengthy, thereby increasing searching costs. If a firm identifies a new technology as not only radical, but also potentially disruptive, they should invest substantially more into the searching and negotiation processes than they normally would for an incremental technology upgrade.

Limitations and Future Research

Consistent with most survey research, this study contains a few limitations and offers opportunities for future research. First, this study focused primarily on the views of adopting managers. However, lower level employees are also likely to utilize a newly adopted disruptive technology and may not have the same views towards that disruptive technology as an adopting manager. For example, while an adopting manager may be able to see that a new disruptive technology can lead to more long-term efficiencies, a lower level employee may view that same disruptive technology as frustrating and a hindrance to their short-term goals. Therefore, future research should view the potentially differing opinions of managers and their subordinates.

Second, this study only surveyed managers after they had adopted a cloud computing technology. A longitudinal study that surveyed managers before, during and after the adoption decision may be more diagnostic. Further, a longitudinal study would offer the ability to compare the motivations of adopting managers to non-adopting managers. Third, this study only viewed one type of disruptive technology – cloud computing. The

perceived benefit of using cloud computing in this study is the widespread growth the technology has seen in recent years, thus enabling us to view the emergence of a disruptive technology as it occurs. However, by viewing just one technology, we are sacrificing a certain amount of generalizability. A future study could look at a variety of disruptive technologies to truly capture the relationships found in this study. Finally, future research should consider looking at the impact of a poor adoption decision versus a strong adoption decision. For example, if the buyer views the most recent adoption as a poor one, would they become more likely to shop around in the future? Conversely, would a manager who made a good decision, as driven by efficiency motives and searching efforts, be more likely to stick with one supplier moving forward? As disruptive adoption decisions are risky, the perceived success or failure of such a decision is likely to influence the future of an interorganizational relationship and therefore provides an interesting avenue for research.

Conclusions

Given our findings, this article should extend the current thinking on product adoption with a more direct focus on the antecedents of quality decision making. We have shown that, in disruptive technology adoption scenarios, adherence to normative supplier pressures could lead to a low quality adoption strategy. Interestingly, these pressures are exacerbated by strong levels of pre-adoption interorganizational trust and mimetic pressures brought on by competitors. Instead of relying heavily on pre-existing

relationships and competitors' strategies, potential adopters should be motivated to make the most economically efficient purchase while increasing searching costs and developing IT capabilities. In scenarios where minimizing searching efforts are not of utmost importance, managers should explore all possible adoption alternatives as opposed to simply purchasing from a highly trusted supplier. Given these implications, this article should offer buying managers a radical new way of looking at their technology adoption decisions.

CHAPTER 4.

ESSAY 3: SALES FORCE ACCEPTANCE OF DISRUPTIVE TECHNOLOGIES: THE INFLUENCE OF INDIVIDUAL EMPLOYEE MOTIVES

Abstract

In this study, we measure the roles of individual performance motives, team goal commitment motives, and managerial support in the acceptance of disruptive technologies amongst sales force members. Disruptive technologies are unique in that they require the end user to drastically change their work processes in order to fully integrate the technology. As this transition to a disruptive technology takes both time and effort, a salesperson is likely to be distracted from their primary goals (e.g. hitting deadlines or goals). We explore the interaction of these factors, and find that the disruptiveness of a technology may negatively moderate a salesperson's motivation to accept that technology. This analysis introduces a new scale that measures technology disruptiveness at the employee level. In hopes of negating the impact of individual motives on acceptance of disruptive technologies, we also measure the moderating influence of managerial support and team goal commitment motives, finding managerial support to be the more important factor. In sum, this article builds upon previous literature by developing a new scale for measuring employee-level perceived technology disruptiveness and highlighting the negative impact of these technologies on individual salesperson motives to adopt.

Introduction

The development and promotion of congruent goals between higher-level sales force managers and their salespeople have long been points of tension for firms (Vroom & Yetton, 1973; Vroom & Jago, 1978). Often times, salespeople are motivated to focus on short-term goals while higher-level managers concern themselves more with long-term, strategic goals (Witt, 1998). For example, although the acceptance of information technology (IT) tools has been shown to improve sales performance, individual salespeople tend to resist their introduction (Ahearne et al., 2007). While this contrast in motivations can be difficult to bridge, well-managed firms educate their lower-level employees on the long-term goals of upper management and explain how their short-term goals can contribute to the overall success of the firm.

In everyday operations, proper training and repetition can hasten employee understandings of long-term goals and the promotion of goal congruence (Bowen & Ostroff, 2004). However, the development of this understanding that leads to goal congruence can be much more difficult when a disruptive technology is introduced to the firm (Morgan & Inks, 2001; Speier & Venkatesh, 2002). Disruptive technologies are those that displace a commonly accepted technology and, within firms, may require employees to undertake radical changes and adopt new work processes (Lyytinen & Rose, 2003; Sherif et al. 2006). However, at the managerial level, emerging, disruptive technologies are appealing as they can potentially offer a future competitive advantage for the early adopters (Christensen, 1997; Tellis, 2006).

Given the aforementioned dilemma, we investigate the influence of managerial support, team goal commitment motives, and individual salesperson performance motivations on acceptance of a technology. While we expect these motivations to lead to technology acceptance, we propose that the disruptiveness of the new technology will negatively moderate the influence of individual motivations on technology acceptance. Unique to this study, a new scale that measures perceived technology disruptiveness at the salesperson level is introduced to differentiate between disruptive and incremental technologies, thus improving upon the commonly accepted measures for technology disruptiveness.

Beyond exploring the goal congruency issues involved in disruptive technology adoption, this article also investigates potential variables that could lead to issue resolution. As noted in previous literature, the eventual success of a newly adopted technology is dependent on the level of acceptance amongst salespeople (Robinson et al., 2005). Therefore, we examine managerial support and team goal commitment motives as two potential moderators that could mitigate the negative influence of individual performance motivations on employee acceptance of a disruptive technology. Our findings highlight the potential hurdles involved in introducing a disruptive technology to a sales force and the intervening actions that can help firms overcome these obstacles.

Background

Disruptive Technology

Over the past decade and a half, the concept of disruptive technology has become a popular topic in both academic circles and mainstream press. By definition, disruptive technologies are those that demonstrate the ability to dislocate previously dominant technologies within a given industry (Christensen, 1997; Tellis, 2006). Initially, these types of technologies are inferior to dominant technologies on the primary set of attributes that are attractive to mainstream customers. However, while a disruptive technology initially appeals to only niche customers, its primary attributes tend to gradually improve. Subsequently, the disruptive technology begins to appeal to mainstream customers and the technology consequently supersedes the previously dominant technologies (Govindarajan & Kopalle, 2006). For example, digital cameras transformed the camera industry in the late nineties and effectively obsoleted the film camera in the process (Lucas & Goh, 2009). Furthermore, firms willing to accept disruptive technologies early on have often benefitted from their foresight, eventually displacing the slower firms who stayed with the previously dominant technology (Christensen, 1997; Tellis, 2006).

Recognizing the value of a disruptive technology during its emergence can be extremely difficult (Doering & Parayre, 2000). In fact, disruptive technologies generally underperform at their outset as they tend to be inferior to dominant technologies on the

product dimensions that are most valued by mainstream customers (Christensen, 1997). It is only over time that the capabilities of disruptive technologies exceed the capabilities of previously dominant technologies. As a result, disruptive technologies tend to present potential adopters with a number of short-term issues. First, unlike with an incremental technology, the introduction of a disruptive technology into a firm "causes drastic changes in the architecture of work processes" (Sherif et al. 2006). Oftentimes the adoption of new technology, new strategies and new methodologies are met with reluctance by the employees of the adopting firm (Lyytinen & Rose, 2003). Within the sales setting, these changes may lead to negative attitudes towards the technology and ultimately rejection of the technology (Morgan & Inks, 2001). Furthermore, the salespeople using the technology may not immediately be able to see how it fits into their short-term goals and may reject it (Speier & Venkatesh, 2002).

Second, actually determining which technologies are disruptive can be a difficult task for buying managers while the technology is still emerging. Many disruptive technologies fail and, unfortunately, predicting the success of very young technologies can be quite difficult (Danneels, 2004). This difficulty presents a unique risk for potentially adopting managers. Adopting managers not only take a chance on an unproven product, but must also be able to abandon their previous technologies as well as the processes and strategies associated with them. Conversely, firms that do not adopt the new technology may be left at a competitive disadvantage (Christensen, 1997; Tellis, 2006). This uncertainty is generally not lost on employees and may add to their reluctance to accept an emerging, disruptive technology (Speier & Venkatesh, 2002; Lyytinen & Rose, 2003).

Goal Congruence: Salesperson Goals v. Managerial Goals

Goal congruence between a firm's upper management and individual employees has long been noted as an important antecedent of organizational decision making (Vroom & Yetton, 1973; Vroom & Jago, 1978). An employee who does not fully understand management's priorities and decision-making strategies may adversely affect the overall performance of the firm by focusing on low-priority goals (Witt, 1998). This lack of understanding could also negatively impact the employee's commitment to the organization as the employee may not be able to assess their fit in the firm's long-term goals (Kristof, 1996; Vancouver & Schmitt, 1991). According to expectancy theory, an individual's work motivation is dependent on the link between performance and reward (Witt, 1998). Thus, an employee will select the behavior from a larger set of possible behaviors that will most likely lead to the most desirable outcome for that employee (Oliver, 1974). Principal-agent models of employee incentives also illustrate an ongoing tension between individual motives and firm goals. According to Baker (1992), bonus- and commission-based compensation structures are especially useful when accurate measures for employee evaluation are available, such as sales volume or profit. However, when a firm's objective is to increase long-run performance (for example, through the upgrading of internal technologies), traditional incentives are no longer as effective. This is especially true in a sales context where aligning individual motives and firm motives can be uniquely difficult. In hopes of aligning salespeople and firm goals, incentivized

compensation plans for salespeople tend to be extremely complicated and vary greatly from one individual to another (Lo et al., 2011).

Given this understanding, individual goals should be consistently tied to larger organizational goals. Unfortunately, this is not always easily accomplished. For example, Speier & Venkatesh (2002) analyzed a telecommunications firm that introduced a new CRM technology to their sales force in hopes of improving responsiveness to customers and increasing on-site sales orders. In this case, the technology was viewed by the sales force as having a negative impact on the sales process, resulting in the technology ultimately being rejected. Ultimately, management's goals were sidetracked by individual employee motivations and goals. Although the acceptance of IT has been found to positively improve sales person knowledge, productivity, and job performance, the resistance of new technology from salespeople is quite common (Ahearne et al., 2007). When faced with major organizational changes, salespeople may exhibit fear of interference, loss of power, and general resistance to change (Morgan & Inks, 2001). When the change involves the introduction of new technology, fear of technology and a perceived lack of fit with the technology to the task can cause salespeople to reject the technology (Morgan & Inks, 2001; Speier & Venkatesh, 2002). Employees, even those outside of a sales setting, may feel that integrating new technology may slow them down at work and impede their ability to accomplish individual-level and team-level goals (Lyytinen & Rose, 2003; Sherif et al. 2006). This perceived impediment can lead to goal conflict, especially if coordination mechanisms and organizational learning mechanisms are not in place (Sherif et al. 2006).

Team-Level Goals

Previous research has noted that employees are not solely driven by individual-level goals. Team-level goals often vary drastically from individual-level goals and, as such, may even be conflicting with individual goals (DeShon et al., 2004). While setting strong individual-level goals have shown to improve individual-level performance, these types of goals do not strongly impact team-level performance (DeShon et al., 2004). Instead, setting group-level goals without individual-level goals has shown to have the most positive impact on group-level performance (Crown & Rosse, 1995). In essence, individuals who are focused more on team goals than their own goals are more likely to positively impact team performance and, ultimately, firm performance (Haleblian & Finkelstein, 1993).

Setting team-level goals may also have a positive impact on firm performance during a technology adoption scenario. If an individual employee observes that their co-workers approve of a new technology, they are more likely to favor and accept that technology themselves due to social influence (Venkatesh & Bala, 2008). Edmondson et al. (2001) found that employee collaboration, collective learning processes, and team stability are related to positive outcomes for technology implementation. In their study, successful implementers of new technology collaborated heavily across levels while trying new routines and changing their work processes. Conversely, the organizations that failed to implement a new technology did so because team leaders did not collaborate with

employees and team members were not encouraged to test out new routines in order to aid technology integration.

Hypothesis Development

From the perspective of the upper management within a firm, the motivation to adopt a new sales force technology is often driven by long-term goals (Christensen, 1997; Tellis, 2006). However, the eventual success of that adoption is dependent on the technology's acceptance amongst individual salespeople (Robinson et al., 2005). Thus, it behooves high-level managers and executives to encourage technology acceptance amongst salespeople (Speier & Venkatesh, 2002). Managerial support as a driver of technology acceptance may be defined as "the presence of power elites or champions supporting the innovation" (Leonard-Barton & Deschamps, 1988, pp. 1254). Salesperson acceptance of technology is defined as "the degree to which a salesperson integrates IT tools into his or her sales activities" (Ahearne et al., 2007, p.336). Schillewaert et al. (2005) note that managerial support in the form of user training and technical user maintenance can drive the adoption and usage of new technologies amongst a sales force. Furthermore, firms that adopt a technology for the purposes of improving the efficiency of their firm – as opposed to superficial reasons, such as copying competitors - are found to be more likely to continue using that technology in everyday business operations (Grewal et al. 2001; Son & Benbasat, 2007). Ultimately, the emphasis and support

provided by top management has a direct influence on the overall intensity of technology adoption within a firm (Wu et al., 2003). Therefore, we hypothesize that:

Hypothesis 1. Managerial support will have a positive influence on salesperson acceptance of technology.

At the individual level, employees who are properly motivated to perform well at work and understand the link between performance and reward are likely to outperform their counterparts (Witt, 1998). Individual performance motives, or performance goal orientation, may be defined within a work setting as "the desire to prove one's competence and to gain favorable judgements about it." (VandeWalle et al., 1997, pp. 1000). Within the sales context, individual salesperson effort has shown to have a positive influence on sales performance (Rapp et al., 2006). VandeWalle et al. (1999) found that performance amongst salespeople increased with their level of effort, their goal setting activities, and how meticulously they planned out their sales calls. These relationships hold true in a technology adoption scenario as Speier & Venkatesh (2002) noted that usage of a new sales force technology increased when the salesperson was committed to his or her profession. Similarly, Schillewaert et al. (2005) noted that salesperson characteristics had a direct impact on both their perceived views of a technology and its subsequent usage. Wierenga & Oude Ophius (1997) find that highly involved and knowledgeable individuals are more likely to continue using a new technology after adoption. These findings suggest that highly motivated salespeople

understand the link between a new technology and performance and are more willing to take on short-term adjustment costs in exchange for future productivity. Along with managerial and peer factors, the motivations of the individual employees play a monumental role in the eventual diffusion, or lack of diffusion, of a new technology within a firm (Robinson et al., 2005). Therefore, we hypothesize that:

Hypothesis 2. Individual performance motives will have a positive influence on salesperson acceptance of technology.

Previous research has noted that employee motives can be complex and may not always align with larger, team-oriented goals. As noted by DeShon et al. (2004), team-level goals and individual-level goals can take on very different forms and, at times, can be contradictory. Therefore, it is important to consider not only an individual's personal goals, but also their commitment to a team. Team goal commitment motives, as measured in this study, may be defined as the extent to which an individual is committed to the objectives of a team (Hollenbeck et al., 1989). A team is defined as "a set of two or more people who interact dynamically, interdependently, and adaptively toward a common and valued goal, each having specific roles or functions to perform and a limited life-span of membership" (DeShon et al., 2004, pp. 1035). While setting individual goals is effective in encouraging high-levels of individual performance, it may not always improve team-level performance. Instead, team goals and group centric goals (goals set at the individual-level that are aimed at contributing to team performance) are most effective at

improving team performance (Crown & Rosse, 1995). This is important to note as successful integration of a new technology is dependent on company-wide, employee acceptance (Speier & Venkatesh, 2002). Furthermore, successful integration of a new technology is dependent on employee collaboration and effective team learning processes (Edmondson et al., 2001). Specifically, as a new technology interrupts previously established work routines, employees are more able to overcome these changes and accept the technology if they are properly motivated at the team-level, are free to attempt new behaviors, and can improve their work processes through shared reflective practices and idea-sharing (Edmondson et al., 2001). Therefore, we hypothesize:

Hypothesis 3. Team goal commitment motives will have a positive influence on salesperson acceptance of technology.

When considering a new technology system, previous literature has noted that an individual's hands-on experience with that system is an important driver of their subsequent decision to accept or not accept that technology (Venkatesh & Bala, 2008). However, in the case of a disruptive technology, the potential user(s) would not generally have any experience with the new technology (Lyytinen & Rose, 2003). Instead, disruptive technologies force the user to adopt new strategies and methodologies, thereby obsoleting any understanding of the previous technology that the employee already possessed (Lyytinen & Rose, 2003; Sherif et al. 2006). Therefore, the process for adopting a disruptive technology may be different than the process for adopting an

incremental technology. As found by Dewar & Dutton (1986), radical technologies differ slightly from incremental technologies as they are generally adopted by firms with greater knowledge resources (Dewar & Dutton, 1986). A similar trend is found with disruptive technologies, as Sherif et al. (2006) note that this need for knowledge is also an important driver for their adoption. This increased need for knowledge can have negative effects, especially in relation to salesperson acceptance. The increased effort required to properly adopt and integrate a disruptive technology can lead to salesperson uncertainty about the technology and, potentially, rejection (Speier & Venkatesh, 2002; Lyytinen & Rose, 2003). Furthermore, salespeople may fear the new technology and feel a general loss of power when it is introduced (Morgan & Inks, 2001). While motivated salespeople may be interested in the potential benefits a new technology could offer, the findings suggest that the relative disruptiveness of the technology could negate the influence of individual motivations on technology acceptance. Therefore, we hypothesize:

Hypothesis 4. The perceived disruptiveness of an adopted technology will negatively moderate the influence of individual motives on salesperson acceptance of technology.

Although goal congruence is an obvious objective for most firms, managerial goals and employee goals may not always be corresponding (Vroom & Yetton, 1973; Vroom & Jago, 1978). Goal congruence may be defined as the agreement between supervisors and

subordinates on the relative importance of potential organizational goals (Vancouver et al., 1994). Oftentimes, a disconnect between management's long term goals and an employee's short-term goals may develop (Witt, 1998). For firms introducing a new technology to salespeople, this disconnect is not uncommon (Morgan & Inks, 2001; Speier & Venkatesh, 2002). However, when individual employee goals and managerial goals are congruent, subordinates are more likely to accept the decisions made by upper management (Vroom & Jago, 1978). As noted by Witt (1998), supervisor-subordinate goal congruence can dilute office politics and have a positive impact on job performance. Therefore, individual-level achievements are more likely to occur when both subordinates and supervisors are highly motivated.

In a technology adoption scenario, upper-level management may encourage acceptance amongst salespeople with the use of a technology champion. Previous literature has suggested that the existence of a "technology champion" is crucial to the success of IT implementation within a firm (Beath, 1991). Champions undertake a number of critical roles in the introduction of a new technology, including creating awareness, educating employees on the perceived benefits, and coordinating efforts to integrate the technology as seamlessly as possible (Premkumar & Ramamurthy, 2007). According to Barczak et al. (2007), unless "champions for IT tools exist, chances are that IT will not be used and its benefits will not be realized." Similarly, Sherif et al. (2006) found that managerial interventions can lessen the conflicts that may impede the adoption of a disruptive innovation. In a sales context, managerial feedback and recognition may influence salespersons' motivations and subsequent behaviors (Le Bon & Merunka,

2006). Given the importance of supervisor-subordinate goal congruence, these managerial interventions are likely to not only have a direct effect on adoption, but also have a moderating role on the influence of individual motives on technology adoption. Therefore, we hypothesize:

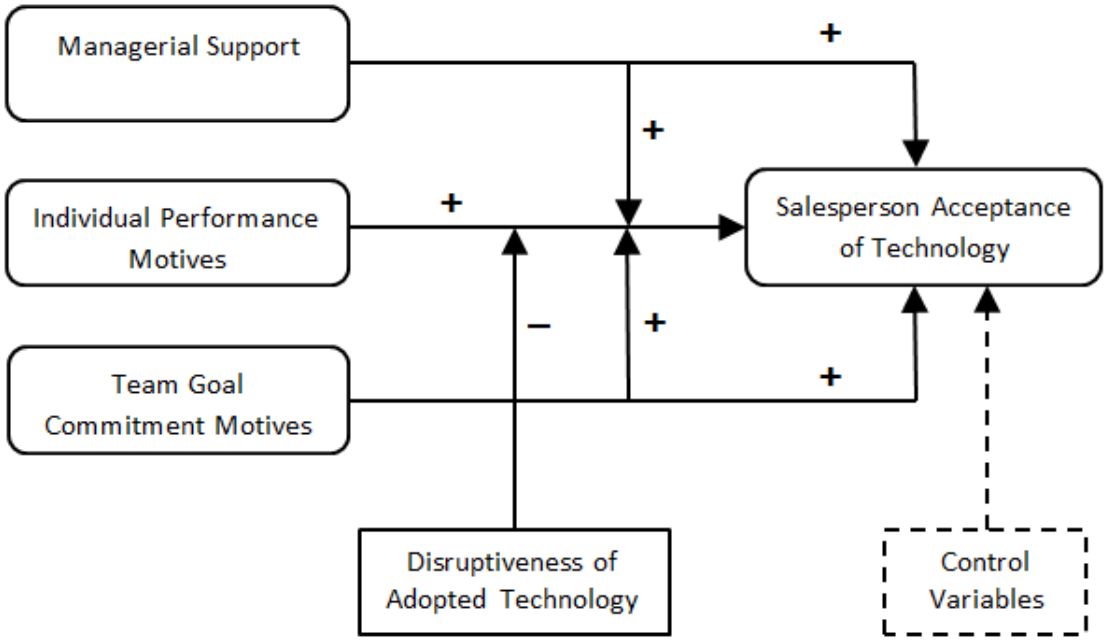
Hypothesis 5. Managerial support will positively moderate the influence of individual motives on salesperson acceptance of technology.

Finally, as noted above, individual's set both personal goals and team-level goals within an organizational setting (DeShon et al., 2004). Edmondson et al. (2001) stress that after a firm has adopted a new technology, the collective learning process undertaken by groups of individual employees is crucial to the integration of that technology into work routines. Further, their findings suggest that not only does a focus on team-level goals impact acceptance, ongoing collaborative efforts between team members may influence individual-level goals. Venkatesh & Bala (2008) also find that peer usage of a new technology can influence individual motives to integrate that technology. Within the context of sales force technology adoption, peer usage has also been found to influence adoption behaviors (Jelinek et al., 2006). These findings suggest that highly motivated salespeople may be more aligned with team level goals, thus increasing the likelihood of technology adoption. Therefore, we hypothesize:

Hypothesis 6. Team goal commitment motives will positively moderate the influence of individual motives on salesperson acceptance of technology.

Given these hypotheses, we propose the following conceptual model:

Figure 3. Conceptual Model



Methodology

Sample and Data Collection Procedures

In order to corroborate the conceptual model, we conducted an online survey of 163 sales force members. Respondent data was collected using a private market research firm

that provides access to online panels. 770 individuals were contacted to complete the survey. 369 respondents qualified as being currently employed in the sales discipline (e.g. account managers, sales representatives, etc.). Individuals who reported employment in upper management or non-client facing roles, such as marketing or technical support, were disqualified. Of this group, 163 respondents reported having adopted a new sales force technology within the past year. Therefore, a response rate of 44.17% was achieved. This sample size is sufficient in order to measure medium sized effects at $p<.05$ (Cohen, 1992).

Within the sample, 111 respondents reported using the new technology daily, 47 reported using the technology at least once a week, and 8 reported using the technology less than once per week. Technology was the most common industry amongst respondents (25.8%), followed by apparel & beauty products (16.6%), household items (12.9%), infrastructure (12.9%), food & beverages (8.0%), insurance & financial services (8.0%), and hospitality & events (5.5%). 12.9% of respondents did not disclose their industry. Respondents reported an average of 9.30 years worked in sales with a maximum of 30 years and a minimum of 6 months. 73 respondents reported sales forces of 25 people or fewer, 33 reported 26 to 100 people, a sales force of 101 to 500 people was reported by 24 respondents, and 10 respondents reported a sales force over 500. 24 respondents did not report the size of their sales force.

Measures and Validation

The survey has been developed primarily using modified items from previous studies on product/technology adoption and goal congruency between employees and managers. Managerial support was measured using three items from Speier & Venkatesh (2002), individual performance motives were measured using items from VandeWalle (1997), and team goal commitment motives were measured using four items adapted from Hollenbeck et al. (1989) and DeShon et al. (2004). Finally, salesperson acceptance of technology, which describes an employee's personal integration of a new technology into their everyday work lives, was measured using four measures from Avlonitis & Panagopolous (2005). Interestingly, there is no commonly accepted scale that specifically measures the disruptiveness of an emerging technology at the employee level. Therefore, a new scale is developed below to measure technology disruptiveness.

Scale Development for Technology Disruptiveness

Most previous literature has utilized ad hoc definitions aimed at differentiating between incremental technologies and disruptive technologies (Danneels, 2004). Certainly, while this method has been relatively effective to this point, they do not measure disruption from the individual user's perspective. Therefore, a new, five-item scale is developed and deployed in unison with ad hoc methods (See: Items 1-5, Table 6). The scales are treated as a manipulation check to ensure that ad hoc definitions of

disruptive technologies align with psychometric measurements. The items are all 7-point Likert scales based on descriptions and definitions of disruptive technologies from Lyytinen & Rose (2003), Sherif et al. (2006), and Govindarajan & Kopalle (2006). Unlike these previous studies, this scale aims to capture the construct of innovation disruptiveness from the end user's perspective.

All qualified respondents of this questionnaire were asked to specifically name the newly adopted technology, and then respond to the five-item scale later in the survey measuring the disruptiveness of the new technology. By doing this, we compare the effectiveness of the new scale items to the previously accepted method of differentiating between incremental and disruptive technologies – assigning a "disruptive" tag to certain technologies that meet the defined criteria, as outlined by Tellis (2006), and an "incremental" tag to those that do not. By this ad hoc method, 98 respondents reported having adopted an incremental technology while 65 reported adopting a disruptive technology. Incremental technologies include new computers, software, mobile telephones, and use of online selling platforms. Disruptive technologies include a Software-as-a-Service (SaaS), Infrastructure-as-a-Service (IaaS), sales data tracking programs, and mobile partner relationship management systems (PRM). These technologies all match Tellis' (2006) definition of a disruptive technology and have been mentioned as such in recent articles (Marston et al., 2011; Obal & Lancioni, 2013, Schmidt et al., 2008). For comparative purposes, Table 5 illustrates the type of technology adopted based on buyers' industry. Perhaps not surprisingly, the salespeople who worked in more complex fields, such as infrastructure and technology, were more

likely to adopt disruptive technologies than those who worked in sold more basic products, such as food & beverage and apparel & beauty products. Further, the respondents introduced to disruptive technologies had more work experience (average = 10.34 years) than those introduced to non-disruptive technologies (average = 8.50 years), however this difference was not significant (t = 1.395, n.s.).

Table 5. Type of Adopted Technology by Industry

	Type of Adopted Technology		
Industry	Non-Disruptive	Disruptive	Percent Disruptive
Infrastructure [a]	7	10	58.8%
Technology [b]	19	23	54.8%
Household Items [c]	11	10	47.6%
Hospitality & Events	5	4	44.4%
Insurance & Financial Services	8	5	38.5%
Food & Beverage	9	4	30.8%
Apparel & Beauty Products	19	8	29.6%
No Response	20	1	4.8%

[a] Utilities, construction, and supplies; [b] software, hardware, digital services, and electronics; [c] furniture, accessories, and collectibles.

To ensure the validity of these incremental and disruptive classifications, the average scores for the five new items were compared between product types. Unlike the incremental technologies, respondents who had adopted a disruptive technology reported those technologies were first popular amongst a niche set of firms ($Disruptive_M = 5.02$, $Incremental_M = 4.36$, $t = 2.622$, $p < .01$), introduced a different set of features and performance attributes relative to the existing products ($Disruptive_M = 5.34$, $Incremental_M = 4.53$, $t = 3.470$, $p < .01$), and caused drastic changes in the architecture of their work

processes ($Disruptive_M = 5.15$, $Incremental_M = 4.64$, $t = 2.211$, $p < .05$). Further, the disruptive technologies were more likely to require users to learn new methodologies ($Disruptive_M = 5.34$, $Incremental_M = 4.73$, $t = 2.679$, $p < .01$) and had improved substantially since they first heard of it ($Disruptive_M = 5.29$, $Incremental_M = 4.83$, $t = 2.021$, $p < .05$). As shown in Table 6, the five items converge on each other as a formative construct. The manipulation check for the formative construct demonstrates that perceived disruptiveness was higher for individuals who had adopted a disruptive technology ($Disruptive_M = 5.228$, $Incremental_M = 4.618$, $t = 2.974$, $p < .01$). These results indicate that the five-item scale is an appropriate measure of technology disruptiveness and that the ad-hoc categorizations used in this study is acceptable.

Validity, Reliability, and Common Method Variance

A confirmatory factor analysis was run to confirm the validity and reliability of the data and the measures used. In correspondence with Kline (2010), all variables are represented by at least three items and were consequently correlated with one-another. The results of this analysis can be found in Table 7. Model fit metrics all met appropriate levels and no items need to be dropped. In support of convergence validity and reliability, Cronbach's Alpha exceeded .7 for all variables, average variance extracted (AVE) exceeded .5, and factor loadings exceeded .7 for all items. Inter-item correlations are higher within factors, thus satisfying the criteria for discriminant validity.

Table 6. Confirmatory Factor Analysis

Construct	Observed Indicator	Factor Loadings	AVE	Cronbach's Alpha	Item Source
Perceived Disruptiveness of Adopted Technology	1. (X TECHNOLOGY) was first popular amongst a niche set of firms.	0.796	0.751	0.938	Lyytinen and Rose, 2003; Sherif et al., 2006; Govindarajan and Kopalle, 2006
	2. Upon its introduction to our firm, (X TECHNOLOGY), introduced a different set of features and performance attributes relative to the existing products.	0.932			
	3. Upon its introduction to our firm, (X TECHNOLOGY) caused drastic changes in the architecture of my work processes.	0.921			
	4. Integrating (X TECHNOLOGY) required me to learn new methodologies	0.835			
	5. (X TECHNOLOGY) has improved substantially since I first heard of it.	0.838			
Managerial Support	6. The use of (X TECHNOLOGY) has been encouraged by management.	0.921	0.819	0.927	Speier and Venkatesh, 2002
	7. My manager has supported the use of (X TECHNOLOGY).	0.922			
	8. The decision makers in the firm encouraged the use of (X TECHNOLOGY).	0.870			
Individual Performance Motives	9. I prefer to work on projects where I can prove my ability.	0.915	0.772	0.928	VandeWalle, D., 1997
	10. I aim to accomplish personal goals at work.	0.931			
	11. I enjoy it when I do well at work.	0.891			
	12. I'm focused on showing that I can perform better than my coworkers.	0.787			
Team Goal Commitment Motives	13. I care if my team achieves their goals.	0.958	0.767	0.933	Hollenbeck et al., 1989; DeShon et al., 2004
	14. I am strongly committed to pursuing team goals.	0.930			
	15. It would take a lot for me to abandon one of my team's goals.	0.817			
	16. I am willing to put forth a great deal of effort beyond what I'd normally do to help achieve team goals.	0.787			

Table 6. Confirmatory Factor Analysis, continued

Construct	Observed Indicator	Factor Loadings	AVE	Cronbach's Alpha	Item Source
Salesperson Acceptance of Technology	17. I have fully accepted (X TECHNOLOGY) into my daily work.	0.901	0.769	0.929	Avlonitis and Panagopoulos, 2005
	18. I feel the (X TECHNOLOGY) system constitutes an integral part of my work.	0.904			
	19. I consider myself a frequent user of my company's (X TECHNOLOGY) system.	0.881			
	20. I fully use the capabilities of my company's (X TECHNOLOGY) system.	0.816			
Model Fit	Chi-square = 312.567; df = 154; $\chi 2/df = 2.030$; RMSEA = .080 (.067-.092); SRMR = .0429; CFI = .955; NFI = .915; IFI = .955; TLI = .944				

Average variance extracted (AVE) score is calculated according to Fornell and Larcker (1981) and should be greater than .5. $AVE = \Sigma(\lambda yi)2/[\Sigma(\lambda yi)2 + \Sigma Var(\varepsilon i)]$, where λ is the loading of each item.

N=163 respondents.

df, degrees of freedom; RMSEA, root mean square error of approximation; SRMR, standardized root mean residual; NFI, normed fit index; CFI, confirmatory factor analysis; IFI, incremental fit index; TFI, Tucker Lewis Index

Harman's single factor test and Lindell & Whitney's (2001) marker variable technique are used to assess the threat of common method variance. Using the method devised by Podsakoff & Organ (1986), Harman's single factor test assumes that a single factor will emerge if common method variance exists. Eight factors had an eigenvalue of over 1.00 and explained 77.43% of the variance in the model. The first factor explained only 37.05% of the total variance. To account for the potential limitations of Harman's single factor test, the marker variable technique was also used (Lindell & Whitney, 2001). Personal innovativeness, which consisted of three items and was not included in the conceptual model, was used as the marker variable. No significant correlations existed between the marker variable and the variables in the conceptual model. Using the

second smallest positive correlation between the marker variable the constructs in the model, an indicator of common method variance was estimated (r_M = .024, p = .570). Therefore, the impact of common method variance is not a serious concern in this study.

Results

The hypotheses were tested using OLS regression analyses. Given the use of interaction terms in our model, OLS regression is a useful and appropriate method for this study. Before conducting the analysis, the independent variables were mean-centered and subsequently multiplied in order to create the interaction terms (Aiken & West, 1991). The main effects on the dependent variable were first run before adding the interaction terms to the model. Firm revenues, salesperson experience, customer location(s), personal innovativeness, and the size of the firm's sales force were all ran as control variables. Personal innovativeness was measured using a 3 item scale developed from Raju (1980) and Roehrich (2004). The five control variables did not have a significant influence on the dependent variable and were thus excluded from the final analyses. All results may be found in Table 7.

Table 7. Regression Results

Hypothesis		Unstandardized Coefficient	t-value	Standard Errors	Conclusion
Independent Variables					
H1	Managerial Support	0.134	2.069*	0.065	Supported
H2	Individual Motives	0.345	4.523**	0.076	Supported
H3	Team Motives	0.420	4.888**	0.086	Supported
	Disruptiveness	0.258	1.770	0.145	N/A
H4	Disruptiveness X Individual Motives	-0.350	-3.507**	0.100	Supported
H5	Managerial Support X Individual Motives	0.104	3.245**	0.032	Supported
H6	Team Motives X Individual Motives	-0.058	-1.426	0.041	Not Supported
Control Variables					
	Firm Revenues	0.000	1.567	0.000	N/A
	Salesperson Experience	-0.010	-0.929	0.011	N/A
	Size of Sales Force	-0.000	-0.451	0.000	N/A
	Personal Innovativeness	0.068	0.682	0.100	N/A

R-square = .697; Adjusted R-square = .684

* level of significance < .05; ** level of significance < .01.

Notes: Dependent variable = salesperson acceptance of technology; d.f., degrees of freedom. N = 163 respondents.
Customer Location(s) was measured as 10 binary variables for the following locales: U.S.A., Canada, Latin America, South America, Europe, Middle East/North Africa, Sub-Saharan Africa, South Asia, East Asia, and Australia/Pacific Islands. Regression results were not significant for any location at $p < .05$

Main Effects

Hypotheses 1-3 predicted that managerial support, individual motives, and team motives would all positively influence technology acceptance at the salesperson level. The model including only the main effects had an R-square of .643, thus demonstrating acceptable fit. As shown in Table 7, the regression analysis of managerial support on to

employee acceptance of technology (b = .134, t = 2.069, p < .05) was significant and positive. The influences of individual motives (b = .345, t= 4.523, p < .01) and managerial support (b = .420, t = 4.888, p < .01) on to salesperson acceptance of technology were both highly significant. Therefore, the influences of the three main effects (H1 – H3) were all supported.

The disruptiveness of the new technology did not have a direct effect on the acceptance of that technology (b = .258, t = 1.770, n.s.) when included in a model with the aforementioned independent variables. However, we note that when disruptiveness of new technology was regressed on technology acceptance as the only independent variable, the influence was positive and significant (b = .886, t = 4.002, p < .01). This indicates that on some level, salespeople find disruptive technologies to be interesting and potentially useful to their occupation.

Interaction Effects

As predicted in hypothesis 4, the relative disruptiveness of a technology negatively moderated the influence of individual motivations on employee acceptance of technology. OLS regression results indicate that while technology disruptiveness does not have a direct impact on salesperson acceptance of technology, the two-way interaction term, disruptiveness X individual motives, was both significant and negative (b = -.350, t = -3.507, p < .01). Further, the R-square improved to .676. Therefore, hypothesis 4 was supported. Importantly, the disruptiveness of the adopted technology did not interact with

either managerial support (b = -.094, t = -.672, n.s.) or team goal commitment motives (b = .246, t = 1.467, n.s.). These findings provide additional support that is it the combination of individual motives and disruptiveness that inhibits acceptance, rather than a general dampening effect of disruptiveness.

Hypotheses 5 and 6 predicted that managerial support and team goal commitment would moderate the influence of individual performance motives on technology acceptance, respectively. While we found a significant, moderating relationship between managerial support and individual performance motives (b = .104, t = 3.245, $p < .01$), team goal commitment motives did not have a moderating relationship (b = -.058, t = -1.426, n.s.). Therefore, hypothesis 5 was supported but hypothesis 6 was not. The final model, including all hypothesized relationships, had an R-square of .697.

Discussion

Disruptive technology is a popular topic among both academics and practitioners. Given this popularity, purchasing firms have a better understanding today, as opposed to the recent past, of the potential benefits of identifying and adopting these technologies as soon possible (Obal, 2013). At the same time, purchasing firms are wary of emerging disruptive technologies due to the uncertainty and integration requirements associated with them (Sherif et al. 2006). This study highlights the major issue with integrating a disruptive technology into a sales force, provides a new scale for measuring

disruptiveness at the employee/user level, and offers a potential solution for overcoming this issue.

Implications

This research offers several broad implications. First, we discuss the problem that purchasing managers encounter after they adopt and introduce a disruptive technology to their sales force. In the face of ever advancing technology, managers understand that it is important to take advantage of any applicable, cutting-edge technologies in their everyday operations. On a very broad level, advanced technology may improve individual, employee performance (Igbaria & Tan, 1997). However, as noted by Avlonitis & Panagopoulos (2005), the link between acceptance of new technology and individual performance is more nuanced and, perhaps, not direct. Instead, they find that sales performance improves only when that individual salesperson finds the technology to be useful. This highlights the dilemma with disruptive technologies; while upper management may find these technologies to be useful in the long-term, lower-level salespeople may not immediately understand the benefits of the technology or they may be deterred by the extra effort required to use the new technology. In this case, the individual motives may no longer be congruent with managerial goals, and therefore the link between individual performance goals and technology acceptance is weakened. Salespeople can utilize past information to help them understand how an incremental technology can help improve their performance, thus driving their desire to accept such

technologies. This is not necessarily the case with a disruptive technology as the individual can expect that their work processes will change and their productivity may temporarily slow down (Sherif et al. 2006). For example, a salesperson that already uses a laptop computer on a regular basis should have no issues upgrading to a new laptop or perhaps even a tablet computer. However, that same salesperson may have an issue seeing the benefit of learning a cloud-driven customer relationship management (CRM) or partner relationship management (PRM) system if they had previously tracked data using simple spreadsheets. In this scenario, the salesperson may find that learning the new system and understanding the benefits of the extensive data to be overwhelming. In fact, our findings indicate that while a salesperson may find a disruptive technology interesting, their individual motives to do well at their job may negate their desire to adopt the new technology. Managers should take into consideration the huge learning curve associated with disruptive technologies and understand that employees may be hesitant to take on the extra efforts necessary for technology integration.

Unfortunately, properly identifying a disruptive technology has been an on-going issue for both academics and practitioners. Ad hoc definitions have been popular in the past, but they lack the applicability necessary for purchasing managers (Danneels, 2004). Furthermore, while one individual may view a technology as disruptive, another individual may not. Therefore, the second major contribution of this study is the introduction of a scale that measures the disruptiveness of a technology at the employee level. Based on previous definitions of disruptive technologies, this scale integrates five formative measures into one independent construct (Lyytinen & Rose, 2003; Sherif et al.,

2006; Govindarajan & Kopalle, 2006). Interestingly, respondents appeared to understand that while a disruptive technology may require them to take on extra work, it also represented an improvement upon the previous generation of technology. It is important to note that this new scale focuses on adopters of the technology at the individual level. For example, Govindarajan & Kopalle (2006) developed a scale that measures technology disruptiveness amongst new technology developers; our study complements their work.

Third, this study measures the moderating impacts of managerial support and team goal commitment motives on the main effect of individual performance motives on salesperson acceptance of technology. As individual motives to adopt weaken for a disruptive technology, we felt it was important to discover variables that would help negate this issue. Prior literature has shown that support from upper level management and peer influences may impact technology acceptance amongst individuals (Barczak et al., 2007; Venkatesh & Bala, 2008). However, our study illustrates that managerial support is the more important factor. The use of technology champions and other motivational tools from the managerial level appear to be especially important in the integration of disruptive technologies in order to offset the waning individual motives to adopt.

Limitations

This study has several limitations. First, all items in the survey were subjective. Objective measures could enrich the data and offer stronger conclusions. For example, determining the amount of hours a salesperson uses the new technology per week would provide and interesting and complementary measure to the existing dependent variable. Second, this study focused on salespeople. This focus was intentional as it is relatively common for salespeople to be introduced to new technologies without much input. Further, while sales force members may be incentivized by upper management to adopt a new technology, their short-term sales figures are generally viewed as their ultimate priority. Thus, the individual motives of a salesperson may not align with new technology adoption efforts. While we believe that our results are generalizable, a future study may consider the impact of disruptive technology adoption in other disciplines. Third, this study did not reveal the role of personal innovativeness. Personal innovativeness was measured as a control variable in the survey, but was not found to be significant in our model. However, prior research as shown that personal innovativeness is a nuanced construct and can impact technology acceptance, even within organizations (Yi, Fiedler, and Park, 2006). Future research should take a closer look at personal innovativeness as it impacts perceptions and adoption of disruptive technology. Finally, this study views salesperson acceptance of technology at specific moment in time. While this approach is quite common in the technology adoption literature, and allows for a broad sample, researchers may consider running a similar study over a few years. As researchers

continue to strive to understand disruptive technologies and their integration, longitudinal studies may become more common.

CHAPTER 5.

CONCLUSIONS

As the name suggests, disruptive technologies have the tendency to quite literally disrupt their potential users who may be accustomed to using a completely different system (Sherif et al. 2006). Unlike incremental technologies, the adoption of disruptive technologies within a firm can cause uncertainty about the appropriateness of the new technology, discomfort about changing work processes, and, potentially, employee rejection of the new technology (Morgan and Inks, 2001; Speier and Venkatesh, 2002; Lyytinen & Rose, 2003). Furthermore, the desire to alleviate these increased levels of uncertainty and discomfort can lead purchasing managers to rely heavily on trusted suppliers, for better or worse (Katz and Tushman, 1979; Ganesan, 1994).

For these reasons, this dissertation looks at the influence of buyers, suppliers and employees on the adoption of disruptive technology. First, it is found that pre-existing, interorganizational trust has a positive impact on the perceived usefulness, ease of use and value of a given disruptive technology, thereby positively influencing the likelihood of technology adoption. Consequently, this finding highlights the potential advantage that incumbents possess in the sale of disruptive technologies over new entrants who would not have had the opportunity to develop pre-existing trust with prospective customers.

Certainly, this information is useful for suppliers, yet buyers of disruptive technologies would gain more benefit from understanding the antecedents of a high quality adoption decision of a disruptive technology. Therefore, the second essay views a

variety of antecedents and uncovers that efficiency motives and higher search efforts have a positive influence on the quality of the adoption decision. Interestingly, normative pressures from suppliers, as driven by interorganizational trust, have a negative influence on the quality of the adoption decision. These findings highlight the need for buyers to not simply rely on their pre-existing relationships in the case of disruptive technology adoption and instead should aim to exert increased efforts in order to find the most optimal disruptive technology for their specific needs.

Finally, the third essay extends beyond the view point of buying managers to consider the potential negative influence of individual employee goals on the integration and acceptance of disruptive technologies within a firm. Specific to the sales context, it is found that the disruptiveness of a technology can negatively moderate the influence of individual motives on technology acceptance. Conversely, managerial support may be able to negate this effect as it is found to positively moderate the influence of individual motives on technology acceptance. A new scale is introduced in this study that measures the relative disruptiveness of a technology, thus contributing directly to the innovation literature.

As a whole, this dissertation demonstrates how the adoption processes undertaken by buying managers, individual employees, and vending suppliers of disruptive technologies should differ from the processes involved in the adoption of incremental technologies. Beyond the current work, the general topic of disruptive technology adoption and integration remains a relatively under-researched area and therefore is ripe with potential. While this dissertation tends to take a more subjective view of the impact of the adoption

a disruptive technology in a firm, future research should consider taking more objective measures. For example, if we are to accept that disruptive technologies take longer to integrate into a firm than incremental technologies, future studies should look at how long this integration process takes and at what financial cost. Given these extra costs, when is it appropriate to adopt a disruptive technology? Furthermore, it may be interesting to view the impact of a newly adopted disruptive technology on the adopting firm's innovative capabilities. In other words, does the adoption of disruptive technologies lead to more innovative behaviors within in a firm?

Certainly, room for future research exists in the area of disruptive technology adoption. Ideally, the work within this dissertation will serve as a jumping point for future research on the adoption and integration of disruptive technology. This work demonstrates that previous findings on technology adoption are not sufficient when considering disruptive technologies, therefore encouraging authors to view these unique technologies through a different lens. Holistically, this dissertation strengthens the current understanding of disruptive technologies, the processes of disruptive technology adoption, and the roles of buyers, suppliers and employees in these processes.

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APPENDIX A

ESSAY 1: DESCRIPTIVE STATISTICS

	Mean	Std. Deviation
1. Who makes the external software services purchases in your company?	2.25	0.856
2. Approximately, what are the annual sales dollars of the firm your currently work for?	2.43	1.422
3. Approximately how many people work for your firm?	4,632.11	18,215.55
4. Approximately how many people work in your IT department?	1,610.04	9,596.93
5. IT employees/All employees (%)	25.80%	23.92
6. Approximately what is your annual IT budget ($)?	$17,013,289.23	9,584,930.39
6. Approximately what percentage of your company budget is dedicated to IT?	34.012%	28.5604
7. How long have you worked with your current CRM supplier (years)?	3.57 years	2.973

Note: N=134; Question 1.=[1=single IT personnel; 2=several IT personnel; 3=several IT and non-IT personnel; 4=several non-IT personnel; 5=single non-IT personnel]; Question 2.=[1=less than $50 million; 2=$50-500 million; 3=$500 million-$1 billion; 4=$1-$3 billion; 5=$3-$10 billion; 6=over $10 billion]

APPENDIX B

ESSAY 1: CORRELATIONS, MEANS AND STANDARD DEVIATIONS

	Mean	Standard Deviation	1	2	3	4	5	6
1. Interorganizational Trust	15.89	1.924	1					
2. Perceived Ease of Use	7.79	1.231	.496**	1				
3. Perceived Usefulness	12.15	1.535	.544**	.626**	1			
4. Perceived Value	8.04	1.076	.555**	.675**	.620**	1		
5. Perceived Financial Stability	11.46	1.794	.499**	.356**	.360**	.387**	1	
6. Intention to Adopt	11.52	1.589	.521**	.424**	.536**	.472**	.485**	1

Note: N=134; All means and standard deviations compiled from summation of multiple items on 5-point Likert scales. 'Trust' = 4 items; 'Perceived Value', 'Financial Stability,' and 'Intent to Adopt' = 3 items each, 'Perceived Ease of Use' and 'Perceived Value' = 2 items each. ** Correlation is significant at the 0.01 level (2-tailed).

APPENDIX C

ESSAY 1: INTER-ITEM CORRELATIONS

	Trust1	Trust2	Trust3	Trust4	Ease1	Ease2	Useful1	Useful2	Useful3	Value1	Value2	Fin1	Fin2	Fin3	Intent1	Intent2	Intent3
Trust1	1																
Trust2	0.59	1															
Trust3	0.44	0.54	1														
Trust4	0.53	0.58	0.60	1													
Ease1	0.32	0.38	0.30	0.36	1												
Ease2	0.37	0.46	0.34	0.41	0.65	1											
Useful1	0.32	0.44	0.38	0.45	0.47	0.42	1										
Useful2	0.34	0.47	0.42	0.49	0.53	0.44	0.63	1									
Useful3	0.27	0.26	0.30	0.35	0.53	0.48	0.50	0.58	1								
Value1	0.41	0.47	0.39	0.38	0.59	0.56	0.46	0.45	0.42	1							
Value2	0.40	0.44	0.37	0.40	0.51	0.57	0.46	0.44	0.59	0.62	1						
Fin1	0.40	0.33	0.29	0.34	0.25	0.23	0.25	0.34	0.24	0.32	0.23	1					
Fin2	0.41	0.42	0.34	0.35	0.28	0.30	0.35	0.32	0.26	0.34	0.30	0.72	1				
Fin3	0.38	0.35	0.33	0.26	0.35	0.27	0.23	0.19	0.19	0.37	0.29	0.50	0.60	1			
Intent1	0.29	0.41	0.35	0.44	0.40	0.32	0.42	0.42	0.40	0.39	0.38	0.33	0.34	0.33	1		
Intent2	0.32	0.29	0.22	0.35	0.34	0.24	0.24	0.33	0.34	0.26	0.33	0.39	0.32	0.31	0.49	1	
Intent3	0.41	0.40	0.37	0.42	0.35	0.29	0.39	0.45	0.44	0.39	0.38	0.37	0.36	0.35	0.57	0.62	1

Note: All items significant at p-values<0.05.

APPENDIX D

ESSAY 2: SURVEY

All questions measured on a 7-point Likert scale except where noted (1 = strongly disagree, 7 = strongly agree)

Adoption (screening questions/control variables)

- Has your company adopted a cloud computing system (e.g. Software-as-a-Service (SaaS), Infrastructure as a Service (IaaS), Platform as a service (PaaS))?
  [ ] Yes; [ ] No
  If you responded no, you may skip the rest of this survey
- If so, from who?
  [ ] Microsoft; [ ] Oracle; [ ] Salesforce.com; [ ] SAP; [ ] SugarCRM; [ ] Amazon; [ ] Other _____
- Did you personally participate in/ have input into the decision to adopt cloud computing for your firm?
  [ ] Yes; [ ] No
  If you responded no, you may skip the rest of this survey
- Did you conduct business with your cloud computing provider before your adoption decision? If so, for approximately how long beforehand?
  _____ Months (input 0 if the provider was new)

Searching Efforts (Srinivasan and Ratchford, 1991)

For the following questions, please think back to the process of deciding on a SaaS, IaaS, or PaaS provider.

- We spent a lot of time talking to cloud computing vendors before deciding on the right system.
- We exerted a lot effort in searching for the right cloud computing vendor.
- We spent a lot time searching for our current cloud computing supplier.

Quality of Adoption Decision

Perceived Usefulness (Davis et al., 1989)

Please consider your present-day opinion towards your current SaaS, IaaS, or PaaS system.

- Using our cloud computing system improves my performance at work.
- Using our cloud computing system at work increases my productivity.
- Using our cloud computing system enhances my effectiveness at work.
- I find our cloud computing system to be useful at work.

Continued Usage (Son and Benbasat, 2007)

- We purchased a cloud computing package, but carry virtually ***no business*** on that system.
- We utilize our cloud computing system on a daily basis.
- Our cloud computing system ***has not*** become an important part of our business operations.
- We are using our cloud computing system whenever necessary.
- Our cloud computing system is an important part of our business operations.

Continuance Intention (Bhattacherjee, 2001)

- My firm intends to continue using our cloud computing system rather than discontinue.
- My intentions are to continue using our cloud computing system rather than use any alternative means (traditional software).
- If I could, I would like to ***discontinue*** my use of our cloud computing system.

APPENDIX D

ESSAY 2: SURVEY, CONTINUED

Satisfaction (Bhattacherjee, 2001)
How do you feel about your overall experience with your current SaaS, IaaS, or PaaS system?

- Very dissatisfied/Very satisfied.
- Very displeased/Very pleased.
- Very frustrated/Very contented.
- Absolutely terrible/Absolutely delighted.

Confirmation (Oliver, 1980; Bhattacherjee, 2001)

- My experience with using our current cloud computing system has been better than what I expected.
- The service level provided by our current cloud computing system has been better than what I expected.
- Overall, most of my expectations from using our current cloud computing system were confirmed.

Interorganizational Trust (post-adoption):
Please answer the following questions as they **currently** pertain to your SaaS CRM provider.

- Our current cloud computing supplier treats us fairly. (Gulati and Sytch, 2008)
- Our current cloud computing supplier is even handed in its negotiations with our company. (Zaheer et al., 1998)
- Our current cloud computing supplier is trustworthy. (Zaheer et al., 1998)
- Our current cloud computing supplier operates with integrity. (Lusch et al., 2003)
- Our current cloud computing supplier is an organization I have great confidence in. (Lusch et al., 2003)
- Our current cloud computing supplier can be counted on to do what is right. (Lusch et al., 2003)

Interorganizational Trust (pre-adoption):
Please answer the following questions as they pertain to your current SaaS CRM provider **prior** to your adoption of SaaS CRM.

- Prior to our adoption of our current cloud computing system, our supplier treated us fairly. (Gulati and Sytch, 2008)
- Prior to our adoption of our current cloud computing system, our supplier was even handed in its negotiations with our company. (Zaheer et al., 1998)
- Prior to our adoption of cloud computing, our supplier was trustworthy. (Zaheer et al., 1998)
- Prior to our adoption of our current cloud computing system, our supplier operated with integrity. (Lusch et al., 2003)
- Prior to our adoption of cloud computing, our supplier was an organization I had great confidence in. (Lusch et al., 2003)
- Prior to our adoption of our current cloud computing system, our supplier could be counted on to do what was right. (Lusch et al., 2003).

APPENDIX D

ESSAY 2: SURVEY, CONTINUED

Mimetic Competitor Pressures:

- Prior to our adoption of cloud computing, our key competitors were using that technology (Son and Benbasat, 2007).
- We decided to adopt cloud computing because the best in the business at the time were doing so. (Grewal et al., 2001)
- Our competitors that used cloud computing before us benefited greatly (Son and Benbasat, 2007).
- Our competitors that used cloud computing before us were perceived favorably by others in our industry (Son and Benbasat, 2007).
- We decided to adopt SaaS CRM because it would portray us as a high-tech organization. (Grewal et al., 2001)

Normative Supplier Pressures (Son and Benbasat, 2007):

- Prior to our adoption of our current cloud computing system, our supplier was offering that technology.
- We felt pressured to adopt cloud computing by suppliers prior to our purchase.
- Prior to adoption, large pressure had been placed on our firm to use cloud computing by industry sources.
- Prior to our adoption of our current cloud computing system, several industry sources, including our eventual supplier, promoted cloud computing.

Efficiency Motives (Grewal et al., 2001):

We initially considered subscribing to a cloud computing system because…

- We thought it would increase our efficiency.
- We expected it to reduce our costs associated with running our business.
- We thought it would streamline our operations.
- We believed that it would reduce the cost associated with transacting business with our exchange partners.

Firm Size (Son and Benbasat, 2007):

- How many people does your firm currently employ? Approximately _____
- What were the approximate annual sales or revenues (US dollars) of your firm in the last financial year?
    - [ ] Less than $1 million; [ ] $1–5 million; [ ] $5–10 million; [ ] $10–50 million; [ ] $50–200 million; [ ] $200–500 million; [ ] $500–1 billion; [ ] $1–5 billion; [ ] More than $5 billion

IT Capabilities (Grewal et al., 2001):

The following questions pertain to information technology (IT) capabilities for your organization. Your firm currently…

- Has strong IT planning capabilities.
- Has strong technical support staff.
- Has an understanding of the possible benefits of IT applications, including cloud computing.

APPENDIX E

ESSAY 2: DESCRIPTIVE STATISTICS AND CORRELATION MATRIX FOR THE STUDY CONSTRUCTS

	Mean	St. Dev.	1	2	3	4	5	6	7	8	9	10	11
1. Inter-organizational Trust	30.38	6.08	1										
2. Searching Efforts	15.28	4.254	.443**	1									
3. Mimetic Competitor Pressures	24.6	4.974	.500**	.348**	1								
4. Normative Supplier Pressures	19.19	3.655	.498**	.290**	.648**	1							
5. Efficiency Motives	21.09	3.678	.589**	.440**	.539**	.494**	1						
6. IT Capabilities	16.05	3.839	.511**	.495**	.543**	.461**	.598**	1					
7. Perceived Usefulness	21.2	4.888	.561**	.566**	.482**	.325**	.605**	.673**	1				
8. Continued Usage	26.33	5.734	.468**	.516**	.368**	.266**	.571**	.649**	.771**	1			
9. Continuance Intention	16.37	3.675	.462**	.475**	.295**	.181*	.529**	.579**	.740**	.806**	1		
10. Satisfaction	20.79	4.137	.500**	.369**	.472**	.262**	.612**	.556**	.636**	.540**	.575**	1	
11. Confirmation	15.5	3.264	.567**	.509**	.492**	.387**	.615**	.564**	.747**	.617**	.611**	.686**	1

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).