Industrial Marketing Management xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Industrial Marketing Management

What drives post-adoption usage? Investigating the negative and positive antecedents of disruptive technology continuous adoption intentions

Michael Obal

Manning School of Business, University of Massachusetts Lowell, 1 University Avenue, Lowell, MA 01854, United States

ARTICLE INFO

Article history:
Received 18 November 2015
Received in revised form 23 November 2016
Accepted 4 January 2017
Available online xxxx

Keywords:
Disruptive technology adoption
Normative supplier pressures
Interorganizational trust
Searching efforts
Efficiency motives
Continuous adoption intention

ABSTRACT

This article focuses on the pre-adoption antecedents of disruptive technology continuous adoption intentions at the firm level. Understanding how to make a quality adoption decision, as measured by the firm's satisfaction and intention to continue using the technology after the initial adoption phase, is of critical importance for a buying manager. Given this challenge, a model for disruptive technology continuous adoption intention is proposed that considers the following: pre-adoption interorganizational trust, mimetic competitor pressures, normative supplier pressures, efficiency motives, searching efforts, and post-adoption satisfaction. This model was tested using survey results from 211 recent purchasing managers of a cloud computing service, an emerging disruptive technology. Interestingly, normative pressures from supplying firms prior to adoption led to lower user satisfaction and, consequently, lower intentions to continue adopting and using the technology. 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-oriented motives and actually aim to increase their searching efforts in order to better understand the disruptive technology prior to adoption. These findings add to prior literature demonstrating the complex interplay of external pressures and internal motives on technology adoption strategies.

1. Introduction

Since the introduction of the disruptive technology concept, industrial business researchers and practitioners have aimed to gain a better understanding of how these technologies emerge and overtake existing technologies (Christensen, 1997; Nagy, Schuessler, & Dubinsky, 2016). Disruptive technologies have been found to dominate industries with new, exciting features that are differentiated from existing technologies (such as the personal computer overtaking minicomputers). While purchasing and integrating a disruptive technology early on can provide a small firm with the opportunity to compete with larger competitors, sticking with a declining technology can leave a firm exposed and vulnerable (Christensen, 1997; Danneels, 2004; Tellis, 2006). However, the decision to upgrade to a potentially disruptive technology can be difficult as these technologies are often sold by new entrants and are difficult to evaluate early on (Govindarajan & Kopalle, 2006). As noted by Doering and Parayre (2000, p. 75): "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" Buyers are thus left with a dilemma: Should we consider purchasing an emerging disruptive technology from a relatively unknown firm, or do we stick with an older, trusted firm that may or may not be the leader in the next generation technology? More specifically, what motives or steps will lead to the correct technology adoption decision?

While there has long been a focus on the drivers of technology adoption, there has been much less research investigating the drivers of continued adoption and usage of a technology after the initial adoption phase (Bhattacherjee, 2001). Furthermore, identifying a technology as disruptive before it has displaced the preceding technology can be extremely difficult (Nagy et al., 2016). Managers, therefore, must follow the proper steps and motives in order to identify which technologies are in fact disruptive and will become an integral part of the firm in the future (Danneels, 2004). A firm that adopts a poor-fitting technology may subsequently use that technology less in the future and could be left at a competitive disadvantage compared to those 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 motives, pressures, and efforts that influence continued adoption intention and usage of a disruptive technology after the initial adoption stage.

In high risk and uncertainty scenarios, such as the potential adoption of a disruptive technology, firms often turn to trusted suppliers as a "knee-jerk" reaction (Katz & Tushman, 1979; Karahanna, Straub, & Chervany, 1999). By relying on trust, the buying firm is aiming to mitigate some of their risk and uncertainty (Ganesan, 1994). Prior literature has noted that a trusting, established buyer-supplier relationship offers

E-mail address: michael_obal@uml.edu.

http://dx.doi.org/10.1016/j.indmarman.2017.01.003
0019-8501/

competitive advantages and lowered transaction costs for the buying firm (Morgan & Hunt, 1994; Zaheer, McEvily, & Perrone, 1998; Jeffries & Reed, 2000). For firms adopting incremental technologies, the apparent advantages of interorganizational trust should provide motivation for building strong vendor relationships.

However, a strong buyer-supplier relationship may have a converse effect on adopters of disruptive technologies. Strong, interorganizational relationships tend to reduce buyers' motivations to search for the ideal product and instead lead them to legitimize their decisions and simply rely on their most trusted suppliers (Jeffries & Reed, 2000). 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 decision leading to continued adoption. The majority of firms that introduce disruptive technologies tend to be new entrants to the industry, not incumbents who have developed long-term trust with customers (Henderson, 1993; Christensen, 1997). As such, the ideal supplier of a disruptive technology may be one that the buyer does not have an existing relationship with and whose products are unknown to the buyer.

In order to illustrate this argument, this article utilizes the organizational motivation and learning literature as well as the Expectation-Confirmation Theory (ECT) to develop a model for disruptive technology continuous adoption intentions (Oliver, 1980). While efficiency motives have historically been emphasized in the organizational motivation literature (MacInnis, Moorman, & Jaworski, 1991; Rindfleisch & Heide, 1997), more recent research has looked at the motive to attain legitimacy (Grewal, Comer, & Mehta, 2001), by adhering to normative and mimetic pressures (Son & Benbasat, 2007). This article proposes that legitimacy-oriented motives, such as mimetic competitor pressures and normative supplier pressures, will negatively influence a firm's intentions to continue adopting and using a new technology. Further, the organizational learning literature is utilized by considering the role of searching efforts on continuous adoption intentions (Sinkula, 1994). Unique to this study, interorganizational trust is introduced, which has been studied in the initial technology adoption phase (Pavlou, 2002) but not in the context of continued usage intentions. We posit that legitimacy-oriented pressures will be driven by interorganizational trust – that is, the trust between a buying manager and a supplier of a disruptive technology. Essentially, firms that mimic others and/or give in into perceived norms driven by interorganizational trust will be less likely to search for the "right" technology that will be used well into the future. Conversely, this article recommends that firms adhere to efficiency motives and increase their searching efforts 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 literature that frames interorganizational trust as a positive and searching efforts as a negative (Whetten & Cameron, 1991; Zaheer et al., 1998; Pavlou, 2003).

Combining the aforementioned construct relationships, the goal of this study is to provide a holistic model that explores both the positive and negative antecedents of satisfaction and the subsequent continued adoption intentions for a disruptive technology. Unlike prior studies (Grewal et al., 2001; Karahanna et al., 1999), this paper focuses solely on disruptive technologies which are inherently more difficult to understand and properly adopt than more incremental technologies (Tellis, 2006), thus necessitating different motives and a more extensive searching effort. Furthermore, while interorganizational trust is often viewed as a positive in adoption scenarios (Zaheer et al., 1998; Pavlou, 2003), this study takes a uniquely negative perspective on trust that would not exist in incremental technology adoption scenarios. This model is tested empirically using 211 buyers of cloud computing technology, which has been identified as an emerging disruptive technology (Marston, Li, Bandyopadhyay, Zhang, & Ghalsasi, 2011).

2. Background literature

2.1. Disruptive technology

Introduced in 1997 by Clayton Christensen, the concept of disruptive technology has become a popular topic in both academic circles and mainstream press. According to Christensen (1997), disruptive technologies generally underperform upon their initial release as they tend to fall short of a dominant technology on core product dimensions that are most valued by mainstream customers. However, disruptive technologies exceed the capabilities of dominant technologies on a few dimensions that are appealing to fringe customers. These disruptive technologies also tend to be lower priced upon their initial release and are thus appealing to more price-sensitive customers (Govindarajan & Kopalle, 2006). Over time, the disruptive technology improves on core product dimensions, becomes more appealing to additional customers, and eventually displaces the dominant technology within the mainstream market. As a consequence, the fringe customers who adopted the disruptive technology displace the mainstream customers who stayed with the previous technology (Christensen, 1997; Tellis, 2006).

However, determining which technologies are disruptive can be a difficult task while the technology is still emerging (Nagy et al., 2016). Many disruptive technologies an initially unappealing and, unfortunately, predicting the success of very young technologies can be quite difficult (Danneels, 2004). 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. 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, processes, and associated strategies as disruptive technologies cannot be complementary like incremental or even radical technologies. This adoption of new technologies, strategies, and methodologies, are often met with reluctance by the employees of the adopting firm (Lyytinen & Rose, 2003). In order to alleviate this uncertainty, 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). These trusting relationships are most often found in long-term relationships with incumbent firms as opposed to smaller, new entrants (Ganesan, 1994; Doney & Cannon, 1997). In cases where the incumbent and new entrant suppliers offer similar, potentially disruptive technologies, trust can have an especially biasing impact on the buyer's decision (Obal, 2013).

However, while risk reduction may be desirable when considering the adoption of a disruptive technology, blindly relying on an incumbent may not be an appropriate strategy. 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 innovations that could disrupt the market. New entrants are more adaptable and are not generally constrained by prior competencies and routines; thus, they are more equipped to take advantage of technological opportunities (Tushman & Anderson, 1986; Danneels, 2004). This illustrates a potential downside to relying on pre-existing trust with incumbents to reduce the perceived risk associated with disruptive technology adoptions. Previous buyer-supplier relationships

Please cite this article as: Obal, M., What drives post-adoption usage? Investigating the negative and positive antecedents of disruptive technology continuous adoption ..., *Industrial Marketing Management* (2017), http://dx.doi.org/10.1016/j.indmarman.2017.01.003