Journal of the Association for Information Systems
JAIS

Research Article

Decision Factors for the Adoption and Continued Use of Online Direct Sales Channels among SMEs*

Xiaolin Li
Towson University
xli@towson.edu

Marvin D. Troutt
Kent State University
mtroutt@kent.edu

Alan Brandyberry
Kent State University
abrandyb@kent.edu

Tuo Wang
Kent State University
twang3@kent.edu

Abstract

Although more and more small and medium-sized enterprises (SMEs) use the Internet for business purposes, few of them have adopted the Internet as an online direct sales channel (ODSC). Among those that do use the ODSC, some end up abandoning it after adoption. This study explores a few critical factors underlying the initial adoption and continued use of online direct sales channels among SMEs. Synthesizing existing works, we construct an innovation adoption decision factors classification framework that classifies innovation decision factors into three dimensions: decision entity factors, decision object factors, and context factors. We then operationalize these factors in the context of SMEs' initial adoption and post-adoption continued use of online direct sales channels. We conduct a survey study on SMEs within the United States. The results demonstrate that an SME's initial adoption and post-adoption continued use of an ODSC involve different sets of decision factors. Furthermore, results demonstrate a learning effect within adopting firms that implies they perceive the relative advantage of ODSC differently in comparison to pre-adopters.

Keywords: *technology adoption, continued use, online direct sales channel, SMEs, e-commerce*

* Michael Wade was the accepting senior editor. This article was submitted on 10th March 2009 and went through three revisions.

Volume 12, Issue 1, pp.1-31, January 2011

1. Introduction

Small and Medium-Sized Enterprises (SMEs), which are generally firms with fewer than 500 employees (SBA Office of Advocacy, 2006b), are major contributors to the U.S. economy (SBA Office of Advocacy, 2006a). SMEs' use of innovations is essential for their business performance and may eventually define their success (Cosh, Hughes, and Wood, 1998). Advances in Internet technologies have provided SMEs with unprecedented opportunities to compete with larger firms. The Internet has essentially leveled the playing field and made it possible for SMEs to compete with larger firms without being constrained by geography, market size, or a firm's financial limits.

Previous research conducted in specific economies has revealed a variety of benefits that Internet technologies may bring to SMEs. These include reducing distribution costs and increasing the number of potential customers (Santarelli and D'Altri, 2003), customizing products and prices (Dewan, Jing, and Seidmann, 2000), enhancing market position through improved relationships with customers (Lohrke, Franklin, and Frownfelter-Lohrke, 2006), and enhancing global competitiveness (Hamill and Karl, 1997). Based on a report by Johnston, Wade, and McClean (2007), SMEs in both North America and EU have reported significant financial gains by adopting Internet business solutions.

However, the use of Internet technologies among SMEs is still limited primarily to the gathering of business information, product search (Kula and Tatoglu, 2003), and advertising (Fisher, Craig, and Bentley, 2007). Few SMEs have used the Internet as a sales channel (To and Ngai, 2006). According to a survey conducted by Dholakia and Kshetri (2004), only about 15 percent of SMEs sold products on the Internet, and the number of SMEs offering e-commerce activities was declining or staying static (Houghton and Winklhofer, 2004). Why have some SMEs chosen to embrace the Internet sales channel while many others are indifferent to it?

E-commerce refers to an aggregate of innovations rather than a single technology (Daniel, Wilson and Myers, 2002). Because factors underlying various e-commerce technologies may vary substantially, studying the adoption or continued use of e-commerce as an aggregate term (e.g., Chitura, Mupemhi, Dube and Bolongkikit, 2008; Saffu, Walker and Hinson, 2008) may not be meaningful, and findings from such studies may not be generalizable to individual e-commerce technologies. Therefore, based on specific research problems and from particular perspectives, researchers often focus on particular aspects of e-commerce. For instance, Pavlou and Fygenson (2006) focus their e-commerce adoption on two online consumer behaviors: (1) getting information and (2) purchasing a product from a web vendor.

From the perspective of an SME, this study focuses on the examination of factors affecting the adoption and continued use of one aspect of e-commerce—the online direct sales channel (ODSC), which is defined as an Internet-based sales channel established by an organization to sell its products or services directly to its customers. For our study, an ODSC has the following key attributes: 1. The web platform that facilitates the sales channel must be established and managed by the organization itself. The sales transaction does not involve another organization as a reseller (such as Amazon, Walmart, or Target) or an online market facilitator (such as eBay, Craigslist, or Alibaba), but it may involve a third party for specific functions such as payment and shipping. 2. The sales transaction process (order-taking, payment, and shipping arrangement) must be completed on the designated web platform.

For example, TigerDirect sells its electronic products on a business website of its own. Its website handles the complete sales transaction—product cataloging and searching, order taking and tracking, payment and shipping arrangement. While it uses a third party, PayPal, for payment transactions, its sales transactions do not involve a third party as a reseller or market facilitator. Therefore, this sales channel is an ODSC. In comparison, Taizhou City Rikang Baby Products Co., Ltd., a Chinese manufacturer producing baby items, has a business website, but the website does not facilitate a complete sales transaction—neither order-taking nor payment and shipping arrangements can be

conducted directly on the website. Thus, this does not constitute an ODSC. Samsung USA's business website does not facilitate sales transactions. The company relies on resellers (e.g., Walmart, Costco, Amazon) for online sales. Although sales transactions may be completed online, the company does not have an ODSC, because the sales transactions always involve resellers. Sounds Cheap Inc. sells music products such as Guitar Amplifiers on eBay. While the sales transactions (product search, ordering, payment and shipping arrangements) are all conducted online, this sales channel is not an ODSC because it involves a market facilitator, eBay.

The factors that affect SMEs' initial ODSC adoption and continued use remain largely unexplored. Identifying these factors is critically important to both business decision makers and legislators, particularly if they intend to stimulate the adoption and continued use of the Internet as a sales channel among SMEs. Unfortunately, existing studies about organizational adoption of Internet technologies have mostly been conducted among larger firms. Such studies have focused substantially on the pre-adoption phase and have neglected organizational behavior at the post-adoption phase. Moreover, most extant studies on SMEs' use of the Internet are either conceptual papers or case studies (To and Ngai, 2006). Empirical studies that establish models for ODSC adoption and continued use among SMEs are needed.

This paper intends to bridge the gap found within existing studies. The main objectives of this paper are to: 1) propose a theoretical decision factors classification framework; 2) propose and empirically test a behavioral model on SMEs' ODSC adoption and continued use after adoption and compare the factors that affect SMEs' initial adoption and continued use of ODSC; 3) identify implications of this research and explore avenues for future research.

The rest of the paper is structured as follows: Section 2 proposes the decision factors classification framework. Section 3 discusses post-adoption continued use. Section 4 presents the research model on factors underlying the adoption and continued use of the online direct sales channel and associated hypotheses. Section 5 describes the research methods used in data collection and analysis, and Section 6 reports the findings. Section 7 concludes the paper with a discussion of implications, limitations, and future research.

2. Decision Factor Classification Framework

In the past two decades, IS researchers studying the adoption and diffusion of information technologies have proposed numerous decision factors. The existence of a large number of potential factors in multiple influential theories without a unifying structure has limited the usefulness of innovation adoption research (Benbasat and Barki, 2007). Some researchers have addressed the problem by attempting to categorize those factors. For example, Wang and Cheung (2004) categorized the Internet adoption factors into environmental factors, organizational factors, and managerial factors. Damanpour (1991) suggested organizational innovation was subject to influences from three categories of factors—individual, organizational, and environmental. While these categorization schemes help organize the factors that researchers identified for their particular studies, few of them are inclusive enough to embrace most factors in major existing innovation adoption theories.

In addition to this identified need for a flexible and inclusive classification model, recent criticisms of the direction of technological innovation adoption research (e.g., Bagozzi, 2007; Benbasat and Barki, 2007; Fichman, 2004; Venkatesh, 2006) have focused on the suggestion that the Technology Acceptance Model (TAM) has been overdone, and continuing research that represents "empirical tweaks" (Venkatesh, 2006) of the TAM is not only unlikely to be advancing but also likely to distract IS researchers from more fruitful pursuits (Benbasat and Barki, 2007). Benbasat and Barki (2007) suggest that researchers return to the theory on which the TAM was built, the Theory of Reasoned Action (TRA) (Fishbein and Ajzen 1975) or its descendent, the Theory of Planned Behavior (TPB) (Ajzen, 1991). We take that reasoning a step further and return to the earlier adoption framework proposed by Rogers (1962) in an attempt to propose a universal classification scheme relevant to current technology adoption environments.

The paradigm of the adoption of an innovation by an individual within a social system (for the rest of the paper, the paradigm will be referred to as "Rogers' paradigm") encompasses a robust decision factor classification framework (Rogers, 1962). The paradigm suggests that the adoption of an innovation by an individual contains three divisions: antecedents (factors present in the situation prior to the introduction of an innovation), process (information sources as stimuli), and results (adoption or rejection of the innovation). Antecedents include factors pertaining to the actor's identity and perceptions of the situation, while process covers factors related to perceived characteristics of the innovation. A more recent revision of the paradigm (Rogers, 2003) focuses on the innovation-decision process stages (knowledge, persuasion, decision, implementation, confirmation) and three categories of affecting factors: prior conditions, characteristics of the decision-making unit, and perceived characteristics of the innovation. While this framework has focused primarily on the individual as the unit of analysis, Rogers suggests that it is relevant to organizations and describes the unit of analysis as the "individual (or other decision-making unit)" to reflect this adaptability (p. 170). Rogers' paradigm suggests generic categories of factors and does not prescribe a specific implementation.

By adapting Rogers' paradigm, this paper proposes a decision factors classification framework (Figure 1) that classifies decision factors into three dimensions: decision entity factors, decision object factors, and context factors. The framework is appropriate for individual or organizational decision entities. An innovation decision process (adoption or continued use) is essentially a decision-making process. The outcome of such a process is a decision (whether to adopt or continue to use) that is made by a decision entity on a specific innovation in a particular context. Factors in any of the three dimensions may impact the decision that the decision entity makes. Similar to Rogers' paradigm, specific implementations of the categorized factors will likely vary situationally.

- Decision Object Factors—Attributes of an innovation naturally determine whether a decision entity (an individual or organization) will adopt or continue to use it. Commonly discussed innovation factors include relative advantage/perceived usefulness, complexity/perceived ease of use, trialability, compatibility, observability, technology-based risks, security features, cost, and potentially many others. Although such attributes are measured via the decision entity's perceptions in most studies, the focus is still on the innovation's characteristics. In pre-adoption persuasion stage scenarios, the decision maker's perceptions based on information sources and communication channels are the most salient. In post-adoption confirmation stages, actual performance becomes more important (or, at least, the decision maker's perceptions are based more on actual performance characteristics).

- Decision Entity Factors—The decision entity refers to an individual or an organization that is faced with an innovation adoption/continued use decision. Given the same scenario, decision entities may make different decisions based on differences in industry, age, firm size, expertise, experience, resources, attitude, risk propensity, innovativeness, leadership, globalization orientation, and so on (Ajzen, 1991; Fishbein and Ajzen, 1975; Kahneman and Tversky, 1979). In this study, the decision entity is an SME, which is an organization level entity.

- Context Factors—The decision context refers to the situation in which an innovation adoption/continued use decision is made. Specifically, it is a context or situation shaped by the convergent influences of different players, which encourage or discourage a decision entity to make a particular adoption/continued use decision. Context factors overlap heavily with a commonly used term, "environment." We use decision context in our framework because we believe it clearly emphasizes the situation shaped by decision-relevant factors; whereas "environment" is a more generic term that implies all factors, whether relevant to the decision or not. Additionally, "environment" commonly refers to the physical environment. While this connotation incorrectly limits the term, we believe the term "context" will be less often misinterpreted from its broad intention. Commonly discussed context factors include institutional influence, competitive pressure, cultural and political influences, and pressure from various business partners, such as the suppliers, resellers, and customers.

In any given decision setting, a different set of factors in decision entity, decision object, and context influences the adoption and continued use of the given innovation. This is consistent with existing propositions in the literature that the nature and importance of the antecedents of adoption are expected to vary across different adoption settings (Plouffe, Hulland, and Vandenbosch, 2001; Rogers, 2003).

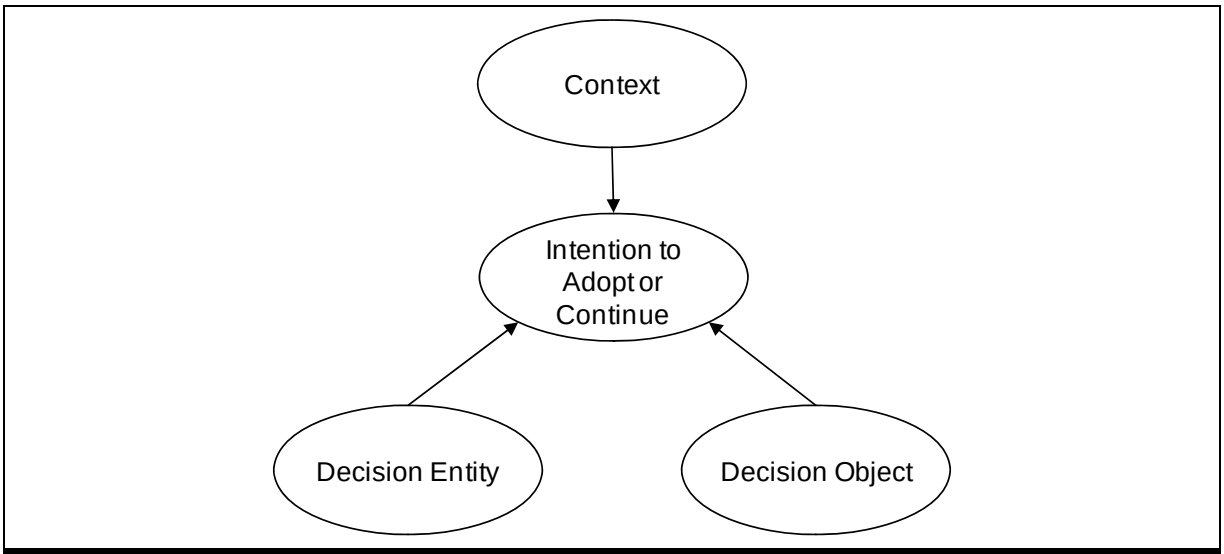

Figure 1. The Decision Factors Classification Framework

3. Post-Adoption Continued Use

The study of continued use has become one of "the most welcome developments" in recent information systems research (Guinea and Markus, 2009, p. 433). While the initial adoption of an information system is crucial for its diffusion, it is the continued use of the system that determines its long-term viability and eventual success (Bhattacherjee, 2001).

While IS acceptance research has predominantly been conducted at the pre-adoption phase, studies on post-adoption behavior can be traced back several decades. Black (1983) proposed that there were similarities between pre-adoption and post-adoption and, thus, factors that facilitated the initial adoption would also influence continued use in the same fashion. Parthasarathy and Bhattacherjee (1998) examined post-adoption behavior in the context of online service and found that factors associated with the initial adoption, such as sources of influence (external and interpersonal), perceived service attributes (usefulness and compatibility), service utilization, and network externality (complementary product usage), determine post-adoption behavior—discontinuance or continued use. Zhu and Kraemer (2005) conducted a cross-country investigation on the post-adoption usage of e-business in the retail industry. They found that technology competence, firm size, financial commitment, competitive pressure, and regulatory support determined continued usage of e-business. Kim and Son (2005) looked into the determinants for post-adoption behavior in the context of online services and suggested that dedication or loyalty, which is determined by perceived current and future benefits as well as switching costs, affects post-adoption usage of an innovation. Saeed and Abdinnour-Helm (2008) found that information quality and system integration affect perceived IS usefulness, which in turn, influences post-adoption usage of the IS.

Despite increasing research in post-adoption behavior (e.g., Karahanna, Straub and Chervany, 1999; Kim and Malhotra, 2005), studies focusing on SMEs (e.g., Grandon and Pearson, 2004; Igbaria et al., 1997; Riemenschneider et al., 2003) have mostly neglected SMEs' IS continuance. In this study, we propose and test a series of hypotheses to examine and compare the similarities and differences in the determinants of initial adoption and continued use of ODSC.

4. Research Model

We operationalize the decision classification framework by proposing a research model on the adoption/continued use of online direct sales channels among SMEs (Figure 2). Based on our literature review that follows, we hypothesize that two decision object factors (perceived relative advantage and perceived ease of use), three decision entity factors (resource slack, Internet expertise, and risk propensity), and a context factor (perceived competitive pressure), are most likely to influence SMEs' intention to adopt and continue to use an ODSC.

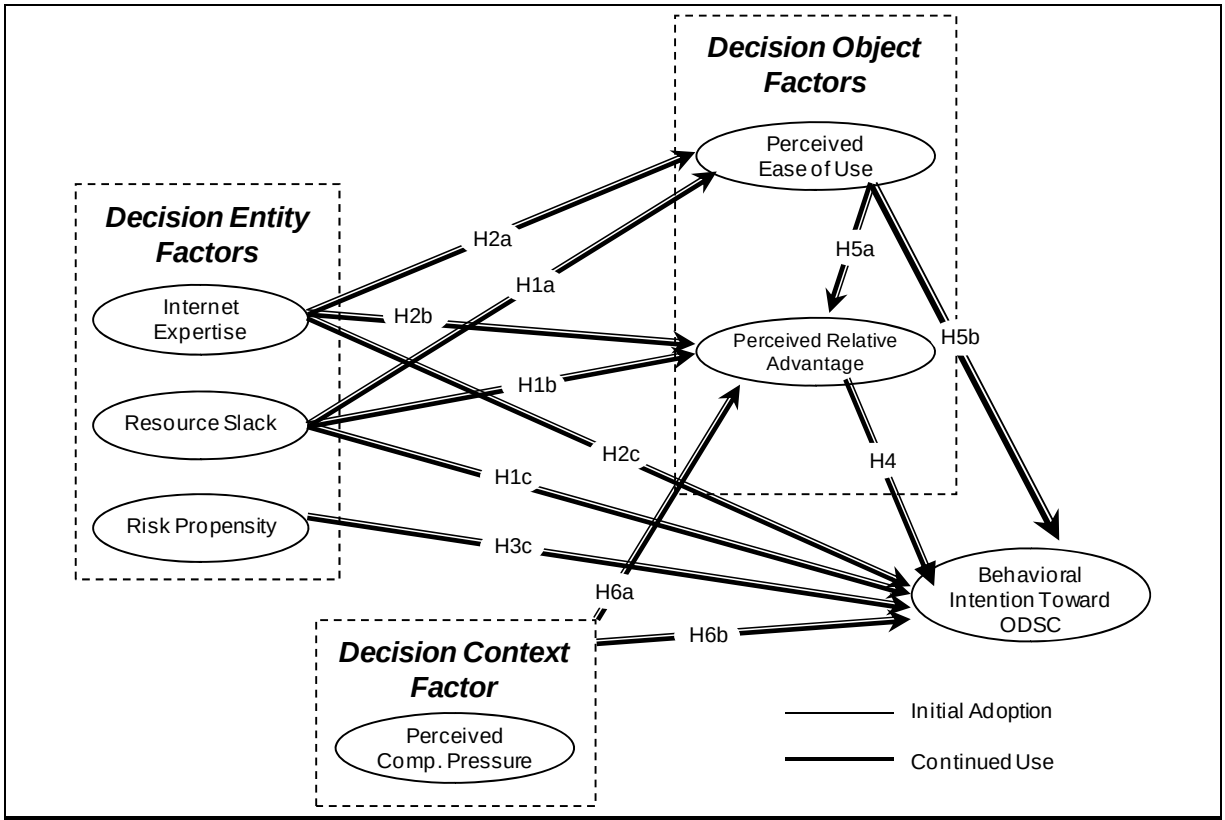

Figure 2. Determinants of Adoption and Continued Use of ODSC among SMEs

These factors are mostly adapted from individual-level frameworks, such as the technology acceptance model (TAM) and Innovation Diffusion Theory (IDT). Adapting individual-level frameworks for use in studies on SMEs is intuitively justifiable. For SMEs, the individual and firm levels are more closely related than for larger firms. Within SMEs the same decision maker tends to constantly make decisions at varied levels (Salles, 2006). In fact, for the smallest firms, it may be the same individual who makes the adoption decision and is the primary user of the technology, making individual-level and organization-level decisions highly similar.

The inclusion of variables in this study is grounded in existing IS adoption theories, empirical findings in SME's IS adoption research, and the availability of data. We build our DO factors on both the TAM and the innovation diffusion theory (IDT). Our DE factors (Internet expertise, resource slack, and risk propensity) are based on findings of existing research on SME adoption of e-commerce related innovations, which we will discuss in the next section. Our initial research design included several DC factors—competitive pressure, customer pressure, and reseller pressure. However, neither customer pressure nor reseller pressure questions received a sufficient number of responses to support meaningful statistical analysis of the two factors. It is likely that those who chose not to respond to these questions did so because they did not perceive the two factors as important in influencing their decisions. Thus, we include only competitive pressure as our DC factor.

4.1. Decision Entity Factors

Organizational factors are among the primary determinants of innovation adoption (Damanpour, 1991). In this study, we examine the impact of three important organizational attributes on SMEs' intention to adopt/continue to use ODSCs: resource slack, Internet expertise, and risk propensity. While the list of all organizational characteristics that have been studied in organizational innovation research is large, many of these do not extend well to the SME context. Characteristics associated with organizational structure and communication channels (e.g., centralization, formalization, vertical differentiation, formal communication, etc.), in particular, are likely to have low variance in a sample of SMEs. Of the remaining items, we determined that factors measuring organizational resources, pertinent organizational technical expertise, and the organization's propensity toward risk were the most likely to be important in this decision scenario.

4.1.1. Resource Slack

Compared to larger firms, SMEs are limited in resources and, thus, their intention to establish ODSCs may be significantly affected by resource availability (Li, 2010). However, the availability of resources may not be sufficient for an SME to embrace an ODSC; what is needed is "resource slack." The resource slack of an organization refers to the excess resources an organization possesses that are not committed to an existing business operation and can be used in a discretionary manner (Dimick and Murray, 1978). Earlier studies (e.g., Bourgeois, 1981; Singh, 1986) have demonstrated that slack resources enable organizations to act more boldly and, thus, positively impact the organization's willingness to adopt and invest in risky innovations. Slack resources may also encourage business managers to take risks because such resources allow the organization to absorb the costs associated with failures (Rosner, 1968; Singh, 1986).

Numerous studies (e.g., Damanpour, 1991) have found that resource slack was positively associated with the adoption and diffusion of innovations. Some of these studies (e.g., Cragg and King, 1993; Lee, 2004) demonstrated that an organization's resource slack positively affects the adoption and diffusion of Internet related technologies. However, few studies have specifically investigated resource slack and SMEs' ODSC adoption. One such study (Franquesa and Brandyberry, 2009) investigated specific types of organizational slack on SME e-commerce adoption. When looking specifically at the linear relation of resource slack (available slack in Franquesa and Brandyberry) and e-commerce adoption, they identified a positive but not significant relationship. This result does not necessarily lead to a conclusion that a relationship does not exist between these items. Furthermore, since this study did not specifically investigate ODSC adoption, further investigation is warranted.

Compared with larger organizations, SMEs have limited resources and, thus, resource slack may play an even more crucial role in their adoption of relatively risky innovations. Resource slack may also positively influence SMEs' expertise, which in turn, impacts the SMEs' perceived ease of use of an innovation (Cragg and King, 1993). Moreover, an SME with slack resources are likely to be less rigorous in estimating the returns of potential innovative projects (Levinthal & March, 1981; March, 1976). As a result, the SME may artificially magnify the perceived benefits of an innovation such as an ODSC. Based on the above discussion, we hypothesize:

Hypothesis 1a: *Resource slack positively affects SMEs' perceived ease of use of ODSCs*.
Hypothesis 1b: *Resource slack positively affects SMEs' perceived advantage of ODSCs*.
Hypothesis 1c-1: *Resource slack positively affects SMEs' intention to adopt an ODSC*.
Hypothesis 1c-2: *Resource slack positively affects SMEs' intention to continue to use the ODSC*.

4.1.2. Internet Expertise

An organization's cumulative knowledge about the Internet and associated technologies impacts its adoption of Internet-based business information systems (Dubelaar, Sohal, and Savic, 2005). Lucchetti and Sterlacchini (2004) suggested that a highly educated workforce was a key factor affecting the adoption of information and communication technologies. Dewar and Dutton (1986) found that technical knowledge was positively associated with innovation adoption.

Previous research has also revealed a positive relationship between technological expertise and e-commerce adoption among SMEs (Li, 2009). Pflughoeft (2003) found that SMEs' IT sophistication was critical to their e-commerce adoption. Teo and Ranganathan (2004) demonstrated that SMEs tended to have difficulty developing expertise in e-commerce among their staff, which eventually affected their intention to adopt e-commerce. Olson and Boyer (2003) suggested that education level and annual training received by employees, both closely related to the expertise of a small organization, impacted its adoption of Internet purchasing. Internet expertise can be considered to be a more specific proxy for relevant expertise useful for ODSC adoption than the more general proxies such as level of education used in many studies.

An SME's Internet expertise, which is an organization-level measure in this study, is naturally linked to the organizational effort expected to establish and maintain an ODSC. A higher level of Internet and e-commerce expertise should positively influence an SME's perceived ease of use of an ODSC. Also, Internet expertise may have a positive effect on perceived relative advantage because an SME with higher Internet expertise tends to have more confidence in running an e-commerce website effectively and, thus, may be more likely to see the advantages of the ODSC. Based on the above analysis, we posit:

Hypothesis 2a: *Internet expertise positively affects SMEs' perceived ease of use of ODSC.*

Hypothesis 2b: *Internet expertise positively affects SMEs' perceived relative advantage of ODSC.*

Hypothesis 2c-1: *Internet expertise positively affects SMEs' perceived behavioral intention to adopt an ODSC.*

Hypothesis 2c-2: *Internet expertise positively affects SMEs' perceived behavioral intention to continue to use the ODSC.*

4.1.3. Risk Propensity

Risk refers to the probability of the occurrence of an undesirable event and the magnitude of loss associated with the event (Mellers and Chang, 1994). In an ODSC, sales are conducted in a virtual environment that involves high uncertainties and risks. Such uncertainties and risks may be manifested in a business party's undesirable actions (e.g., the buyer may default on payment) or the unauthorized access, retrieval, and modification of confidential business data. Risks are substantially higher for SMEs (Ballantine, Cleveland, and Koeller, 1993). However, smaller businesses tend to rely more on risky innovations as a means of competitive strategy than larger firms (Fritz, 1989).

Risk propensity is a decision maker's consistent tendency to take or avoid choices that are believed to be risky (Sitkin and Pablo, 1992). In this study, risk propensity is an organizational-level variable denoting the extent to which an SME is willing to take risks. Risk propensity plays a critical role in SMEs' decisions and performance (Watson and Robinson, 2003) and is found to be a key factor in decision making under risk (Sitkin and Pablo, 1992). Some researchers (e.g., Keil and Wallace, 2000) have also found empirical evidence that risk propensity positively influences organizational decisions on IT related projects.

An organization with higher risk propensity is more likely to recognize positive outcomes as more important than negative outcomes and, thus, overestimate the probability of a gain relative to the probability of a loss (Brockhaus, 1980). In contrast, a risk-averse decision maker tends to weight negative outcomes of a decision alternative as more important, which, in turn, results in a lower perception of the relative advantage of that alternative (Schneider and Lopes, 1986).

In addition, an organization with a higher level of risk propensity tends to proactively approach an innovation and gain knowledge about it, which, in turn, influences its perceived ease of use. Therefore, we posit:

Hypothesis 3a: *Risk propensity positively affects SMEs' perceived ease of use of ODSCs.*

Hypothesis 3b: *Risk propensity positively affects SMEs' perceived relative advantage of ODSCs.*

Hypothesis 3c-1: *Risk propensity positively affects SMEs' intention to adopt an ODSC. Hypothesis 3c-2: Risk propensity positively affects SMEs' intention to continue to use the ODSC.*

4.2. Decision Object Factors

The characteristics of an innovation influence the decision entity's adoption decision concerning the innovation. Value-oriented factors such as perceived usefulness (Davis, 1989) and perceived relative advantage (Rogers, 2003) and effort-oriented factors such as perceived ease of use (Davis, 1989) and effort expectancy (Venkatesh, Morris, Davis, 2003) are frequently found to be major factors affecting the adoption of innovations.

IDT includes five perceived innovation attributes: relative advantage, compatibility, complexity, trialability, and observability. These have been found to explain much of the variance (49-87 percent) in the adoption rate of innovations (Rogers, 2003). The most consistently relevant of these is relative advantage (along with its TAM analogue, perceived usefulness) and is, therefore, included in our model. In the context of ODSC adoption, we believe that compatibility is encapsulated within relative advantage. If an SME's ODSC is incompatible with its products or markets, such incompatibility would be reflected in its perception of whether adopting an ODSC is likely to be advantageous for the firm. IDT's complexity factor and our organizational perceived ease of use (PEOU) are very similar constructs and were deemed unlikely to show discriminant validity. Even if they are divisible, it is likely that complexity will be fully mediated by PEOU in the model. Therefore, complexity is included in our model conceptually in its TAM analogue of PEOU. Rogers (2003) suggested that trialability is more important for early adopters, where peer adopters are not readily found. Certainly the use of ODSCs has reached a diffusion level where the vast majority of SMEs are aware of peer organizations using them. Rogers (2003, p. 258) states that these peers "act as a kind of vicarious trial for later adopters, and hence their own personal trial of the new idea is less crucial." Observability relates to whether the results of innovation adoption are observable by potential adopters. An ODSC is quite observable, as many sites are open to public inspection. Additionally, since observability and (vicarious) trialability would be fairly constant for all respondents in this setting, we omitted them from our model.

4.2.1. Perceived Relative Advantage

One commonly identified value-focused variable is perceived relative advantage, which is defined as "the degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 1983, p. 15). The degree of perceived relative advantage is usually described in economic terms, such as economic profitability, reduced cost, a decrease in discomfort, and savings in time and effort (Cragg and King, 1993; Rogers, 1983). Perceived relative advantage is one of the best predictors of the rate of adoption of an innovation, because it signals the potential benefits and losses resulting from adoption (Rogers, 1983). A meta-analysis of 75 articles by Tornatzky and Klein (1985) indicated that perceived relative advantage is among a few factors that are consistently related to innovation adoption.

Since being proposed by Rogers (1962) in IDT as a key factor affecting the adoption and diffusion of innovations, perceived relative advantage has been consistently found to have a significant influence on SME adoption of e-commerce technologies (e.g., Lee, 2004; Levy and Powell 2003; Looi, 2005; Sandy and Graham, 2007). Other studies (Daniel and Wilson, 2002; Lacovou et al., 1995; Poon and Swatman, 1999) have also found that the perception of the relative benefits of e-commerce correspond to SMEs' adoption intentions toward e-commerce. Given these results, we posit,

Hypothesis 4a: *Perceived relative advantage of an ODSC positively affects SMEs' behavioral intention* to adopt an ODSC.

Hypothesis 4b: *Perceived relative advantage of an ODSC positively affects SMEs' behavioral intention to continue to use the ODSC.*

4.2.2. Perceived Ease of Use

Perceived ease of use (Davis, 1989) or effort expectancy (Venkatesh et al., 2003) refers to the perceived amount of effort required to perform a behavior. This effort-based construct has been examined in numerous studies at the individual level but rarely studied at the organizational level. In this study, we adapt the individual-level perceived ease of use measure and use it to study the organization-level (SMEs') perception of ease of use.

Unlike value-based constructs such as perceived usefulness or perceived relative advantage that have been consistently shown to have a direct effect on behavioral intention, effort expectancy or perceived ease of use has had inconsistent effects on behavioral intention across various studies (Gefen and Straub, 2000). Recent research (e.g., Mollenkopf et al. 2007; Yu et al. 2005) has demonstrated that perceived ease of use often has only an indirect effect on behavioral intention, mediated by perceived usefulness or relative advantage. Given the conflicting findings in the literature, both direct and indirect effects of perceived ease of use on an SME's behavioral intention to adopt or continue to use the ODSC are included in our research model. So we hypothesize:

Hypothesis 5a: *Perceived ease of use positively affects SMEs' perception of relative advantage of the ODSC.*

Hypothesis 5b-1: *Perceived ease of use positively affects SMEs' behavioral intention to adopt an ODSC.*

Hypothesis 5b-2: *Perceived ease of use positively affects SMEs' behavioral intention to continue to use the ODSC.*

4.3. Context Factor – Perceived Competitive Pressure

Competitive pressure is the pressure on an organization arising from the threat of losing its competitive advantage (Abrahamson and Rosenkopf, 1993). Such pressure is described by Abrahamson and Rosenkopf (1993) as "competitive bandwagon pressure," which occurs because many pre-adopters fear that they will lag behind in performance if a significant number of competitors achieve substantive benefits from adopting an innovation. Santarelli and D'Altri (2003) suggest that, when it comes to the adoption of an Internet related innovation, SMEs tend to follow a "wait-and-see" attitude, and mostly focus on the implementation of a defensive strategy; that is, if the context does not exert sufficient pressure, they simply live without the innovation. When the context exerts adequate pressure, SMEs adopt the innovation, not in order to gain competitive advantage, but to compete effectively (Cragg and King, 1993).

Extant adoption literature has repeatedly found competitive pressure to be an important driver behind SMEs' adoption of Internet related innovations. For instance, Dubelaar, Sohal, and Savic (2005) found that an SME's decision on the adoption of e-business related technologies was influenced by its competitors' activities. Daniel and Wilson (2002) identified the single most important driver of e-commerce adoption by SMEs as competitive activity. Several studies (e.g., Sandy and Graham, 2007; Zhu, Kraemer, Xu, and Dedrick, 1997) found that pressure from competitors could force an SME to adopt e-commerce. Specifically, Barnes, Hinton, and Mieczkowska (2003) suggested that e-commerce adoption and investments were driven mainly by a fear of being left behind by competitors rather than by a desire to improve business performance. Competitive pressures may also have an indirect impact on SMEs' intention through the mediation of perceived relative advantage. The reasoning for such indirect effect is that when serious competitive pressures exist, an SME will view an ODSC as advantageous and useful in gaining or maintaining its competitiveness in this climate, and, thus, intends to adopt it. Based on the above analyses, we formulate the following hypotheses:

Hypothesis 6a: *Perceived competitive pressure positively affects SMEs' perception of relative advantage of the ODSC.*

Hypothesis 6b: *Perceived competitive pressure positively affects SMEs' behavioral intention to adopt an ODSC.*

Hypothesis 6b-2: *Perceived competitive pressure positively affects SMEs' behavioral intention to continue to use the ODSC.*

5. Research Methods

5.1. Instrument Development

We used a web-based survey to collect data for this study. Following Churchill's "procedure for developing better measures" (1979), we performed an extensive review of e-commerce literature, innovation adoption and diffusion literature, and literature related to SMEs' use of innovations to determine the constructs and dimensions to be included in the research model. We then developed a pool of survey questions under the constructs and dimensions.

We conducted a series of expert reviews on the question items to assure their relevancy and completeness. This involved 26 interview sessions with nine knowledgeable experts from different areas related to the survey questions: two small business association directors; four business professors specializing respectively in marketing, decision theory, small businesses, and survey methodology; and three doctoral students with a research interest in SMEs. The interviews involved item-by-item discussion on whether the survey questions appropriately and sufficiently represent the universe of content of the construct being measured (Kerlinger, 1973, p. 458). Such expert reviews help establish the content validity of the survey questionnaire (Rungtusanatham, 1998).

We administered the revised questionnaire in a small pilot study. The results from the pilot study led to several minor modifications of the wording and order of the question items. We also dropped a few intentionally embedded repetitive questions due to concerns expressed by the participants in the pilot study.

5.2. Data Collection

We administered the finalized survey questionnaire to a larger sample of SMEs to collect data. A few SME-focused business associations in the State of Ohio (USA), including Ohio Small Business Development Centers (SBDCs), Chambers of Commerce, and Economic Development Centers, assisted in the data collection process. In June 2007, we requested these associations to email an invitation message to their members. We set a one-week timeframe for the participating SMEs to complete the survey. To encourage more SMEs to participate, we emailed a reminder message to the SMEs after the one-week frame ends. Two months later, we sent a second reminder message to the SMEs.

Unlike many other online surveys that are open to the public, ours was strictly controlled and accessible only to the invited SME representative. We employed the following access control mechanisms to ensure the participating SMEs were in our sampling frame and the representative was genuine. First, we ran the survey on a private survey system owned by an SME business association. The survey was not publicized, and the only likely gateway to access it was through the email invitation from a director of one of the SME business associations that assisted with the survey. Second, we invited only a single representative from each SME to participate in the survey and answer questions on behalf of the SME. The representative was asked to provide his/her position in the company and email address, which helped us verify that the respondents were genuine. Finally, we programmed the survey with index logics and skip logics to control participants' access to individual questions. A participant was automatically taken to a sub-survey for a subgroup (pre-adopter group and adopter group) based on his/her answers to a few introduction questions. These questions also ensured that adopters were truly employing ODSC, consistent with our previously discussed definition. A participant might also skip some questions that were irrelevant based on his/her answers to earlier questions.

5.2.1. Sample

We emailed the survey invitation to a total of 2,004 SMEs in June and July 2007. Two hundred and thirteen responses were returned, resulting in an estimated response rate of 10.6 percent. About 87 percent of the survey participants were owner, president, vice president, or managerial staff. These demographics helped enhance the accuracy and reliability of the information collected. The size

distribution of the participating SMEs (Table 1) is consistent with the SME data from the United States Small Business Administration. For instance, our data, just like those reported by the Small Business Administration, show that approximately 95 percent of all employer firms have fewer than 100 employees. Such consistency is an indication that our sample is an unbiased sample, in terms of size distribution. We conducted a t test to compare the mean sizes of the adopters and pre-adopters. While the mean size of adopters (m=41) is larger than the mean of pre-adopters (m=34), the mean difference is not statistically significant (t=-0.62).

A total of nine major industries are represented in the sample including manufacturing, services, retail trade, wholesales trade, finance, insurance and real estate, construction, transportation, and so on (Table 2). The broad representation of different sizes and industries of SMEs improves the generalizability of the study's findings.

Table 1. Size Distribution of the Participating SMEs

Size Classification	No. of SMEs		Total	Percent	Cumulative Percent
	Pre-adopters	Adopters			
>500	2	6	8	3.8	3.8
>200 but <=500	2	4	6	2.8	6.6
>100 but <=200	4	7	11	5.2	11.7
>0 but <=100	112	64	176	82.6	94.4
Undeclared	8	4	12	5.6	100.0
Total	128	85	213	100.0	

Table 2. Industry Distribution of the Sample

Industry	Adopters Group	Pre-Adopters Group	Total number of SMEs	%
Manufacturing	10	17	27	15%
Services	37	48	85	48%
Wholesale Trade	3	2	5	3%
Retail Trade	7	12	19	11%
Finance, Insurance, And Real Estate	4	6	10	6%
Agriculture, Forestry, And Fishing	1	3	4	2%
Construction	1	13	14	8%
Transportation, Communications, Electric, Gas, And Sanitary Services	5	4	9	5%
Public Administration	2	3	5	3%
Total	70	108	178	100%

Table 3 gives the sample breakdown by adoption category. Among the 213 responses, eight turned out to be from non-SMEs (firms with more than 500 employees) and, thus, were dropped from the sample. In the remaining 205 observations, 22 had missing values in multiple fields and were deemed unusable, and, thus, were dropped. Five observations from low-level representatives (secretaries and sales representatives) might not be reliable and, thus, were dropped as well.

In the final data set of 178 SMEs, 108 (60.7 percent) are not currently using ODSC. We will examine the factors influencing their intention to adopt ODSC. The remaining 70 SMEs are currently using ODSC. We will explore the factors affecting their intention to continue to use their existing ODSC.

Table 3. ODSC Adoption among SMEs		
Type of SME	**Number of SMEs**	**Percent**
Currently not using ODSC	108	60.7%
Currently using ODSC	70	39.3%
Total	178	100%

5.2.2. Test for Non-Response Bias and Common Method Bias

To test for non-response bias, we followed the Wave Analysis proposed by Armstrong and Overton (1977), through which we examined whether participating SMEs were significantly different from non-responding ones by comparing the early-half survey responses (n=89) and the late-half responses (n=89). The results revealed no significant difference at the 0.05 level in any variable between early and late responses, indicating no evidence for non-response bias.

We tried to control for several frequent sources of common method bias. First, we examined and fine-tuned the survey questions through expert panel review, pre-testing, and pilot study to reduce item ambiguity (Tourangeau et al., 2000). Second, we placed multiple measures of the criterion variable in different sections of the survey to reduce the respondent's ability and motivation to use prior responses about a predictor variable to answer subsequent questions about measures of the criterion variable, thus reducing consistency motifs (Podsakoff et al., 2003). Third, we emphasized in the survey instruction that there was no right or wrong answer to any question to reduce the influence of social desirability—a respondent's tendency to respond to a survey question in a culturally acceptable and appropriate manner (Podsakoff et al., 2003). In addition, we conducted Harman's single-factor test to assess potential common method bias (Organ & Greene, 1981; Podsakoff et al., 2003). The test reveals no evidence of a significant amount of common method variance.

5.2.3. Scales and Measures

With the exception of behavioral intention and perceived ease of use, which are adapted from the instrument employed in Davis (1989), and Internet expertise, which is adapted from the instrument employed in Goeke (2007), we develop all other scales based upon prior research findings. Measurements use seven-point Likert-type scales. Appendix B lists the survey questions for the two groups—pre-adopters group and adopters group. The unit of analysis for this study is at the organizational level for SMEs. All survey questions are phrased to elicit the respondent's perception of the level of that indicator for the organization as a whole. The questions across different groups are worded slightly differently to reflect whether they are adopters or pre-adopters.

- Perceived Relative Advantage (ADVANTAGE): We use three indicators to measure perceived relative advantage of ODSC to the firm: perceived potential of ODSC to help increase the company's overall revenue, perceived potential to enhance the firm's profitability, and perceived ability of ODSC to improve commercial transaction efficiency, in particular, the efficiency of the ordering process.

- Perceived Ease of Use (EASE): Inspired by Davis (1989), this organizational-level construct is measured based on the efforts expected for an SME to obtain an e-commerce website, train competent personnel for an e-commerce system, and maintain an e-commerce website.

- Perceived Competitive Pressure (COMPETITIVE): We measure an SME's perception of competitive pressures through the examination of its perception of whether its competitors are successfully selling online and whether its competitors' online sales have threatened its market share.

- Internet Expertise (EXPERTISE): An organization's expertise is reflected in the expertise of its employees. Since the expertise of managers of an organization, in particular, of an

SME, may have more influence on the organization's decision, we use two separate indicators to measure the Internet expertise of managers as well as other employees. We adapt the two scales from the measures developed and validated by Goeke (2007) in his study on the use of data warehousing within an organization.

- Risk Propensity (RISK): the construct is measured by an SME's willingness to take risks. Considering the fact that an SME is small in size, and the willingness of the company to take on risks is often determined by the managers' willingness to take risks, we measure the risk-taking propensity of managers as well as the SME as a whole.

- Resource Slack (RESOURCE): A variety of resources are needed to adopt and implement an ODSC. We measure the SME's capacity and sufficiency of several major resources: the availability of a good business website, the sufficiency of human resources to maintain an e-commerce website, and the sufficiency of general resources, which may include financial resources and any other resources needed for the establishment and management of an e-commerce website.

- Behavioral Intention (INTENTION): The measures for behavioral intention are adapted from Davis's technology acceptance model (1989). Survey participants were asked about the extent to which they agreed that their firms would/intended/planned to adopt or continue use of ODSC within the next two years. So, unlike many other studies (e.g., Davis, 1989) where behavioral intention is studied at the individual level, in this study, it is examined at the organizational level.

5.3. Statistical Analysis Method

Considering the fact that each of the two groups (pre-adopters and adopters) has a relatively small sample size (n1=70; n2=108) (Kline, 1998) and the data are not normally distributed—we found Mardia's coefficient (Mardia, 1999) to be much larger than the cutoff value, indicating significant multivariate non-normality—the use of covariance-based structural equation modeling (SEM) may not be appropriate (Byrne, 1989). As an alternative, the component-based SEM using partial least squares (PLS) is not restricted by the assumption of multivariate normality and is less sensitive to sample size and, thus, is a more appropriate technique for the data analysis in this study. We employ SmartPLS 2.0 (Ringle, Wende, and Will, 2005) for the analysis.

Two of our latent variables have two indicators while the remaining five have three indicators. The number of indicators utilized represents a potential limitation; however, the limitation results predominantly in lower power for the tests. For significant results, this likely results in lower than actual path estimates and a conservative finding of significance. Chin, Marcolin, and Newsted (2003) demonstrate this with their simulation study that explores the effects of different numbers of indicators in PLS. Their findings indicate that one indicator tended to greatly underestimate path coefficients, but two or more indicators more modestly underestimate these values. While significant findings are likely conservative and reliable with lower numbers of indicators, conclusions based on insignificant results need to be made cautiously due to the loss of power.

6. Results

6.1. Validity and Reliability

We report the factor loadings generated by the bootstrapping procedure in Appendix C. All loadings are greater than 0.5 (Fornell and Larckner, 1981) and are significant at the 0.01 level, which demonstrates good convergent validity of the model for both the adopters group and the pre-adopters group. The correlation (Appendix D) between any two latent constructs in both adopters and pre-adopters groups is much lower than the threshold value of 0.9 (Bagozzi et al. 1991). Also, the square root of AVE of every given construct is greater than the standardized correlation of the given construct with any other construct in the analysis (Chin, 1998; Fornell and Larcker, 1981). This demonstrates

very good discriminant validity of the constructs. The composite reliability of each construct is much higher than the recommended value of 0.6 (Bagozzi and Yi, 1988) or 0.7 (Chin et al., 2003), indicating satisfactory reliability.

6.2. Findings

Appendix E reports the descriptive statistics and comparison of means of the latent variables for the pre-adopter group and adopter group. SMEs' intention to adopt ODSCs is 3.35 with a standard deviation of 2.19, while SMEs' intention to continue with existing ODSCs is 5.93 with a standard deviation of 1.23. Overall, the mean values of almost all predictor variables in the adopters group are higher than in the pre-adopters group. In order to determine whether the predictor values in the adopters group are significantly higher than in the pre-adopters group, we have conducted the Kolmogorov-Smirnov Test, which is a nonparametric test commonly employed to compare group differences when the data are not normally distributed. The Kolmogorov-Smirnov Z values for all latent variables are significant at the 0.05 level, demonstrating that the values of all predictor variables in the adopters group are significantly higher than those in the pre-adopters group. As would be expected, SMEs that have adopted ODSCs intend to continue their use more strongly than SMEs that have not adopted intend to initiate the use of ODSCs.

We report the latent variable correlations in Appendix D. SMEs' intention to adopt ODSCs is significantly correlated with perceived relative advantage, perceived competitive pressure, and risk propensity, but their intention to continue with an ODSC is significantly correlated only with perceived ease of use. Figure 3 reports the path coefficients and R-squares of endogenous variables in the PLS models in the pre-adopters group and adopters group.

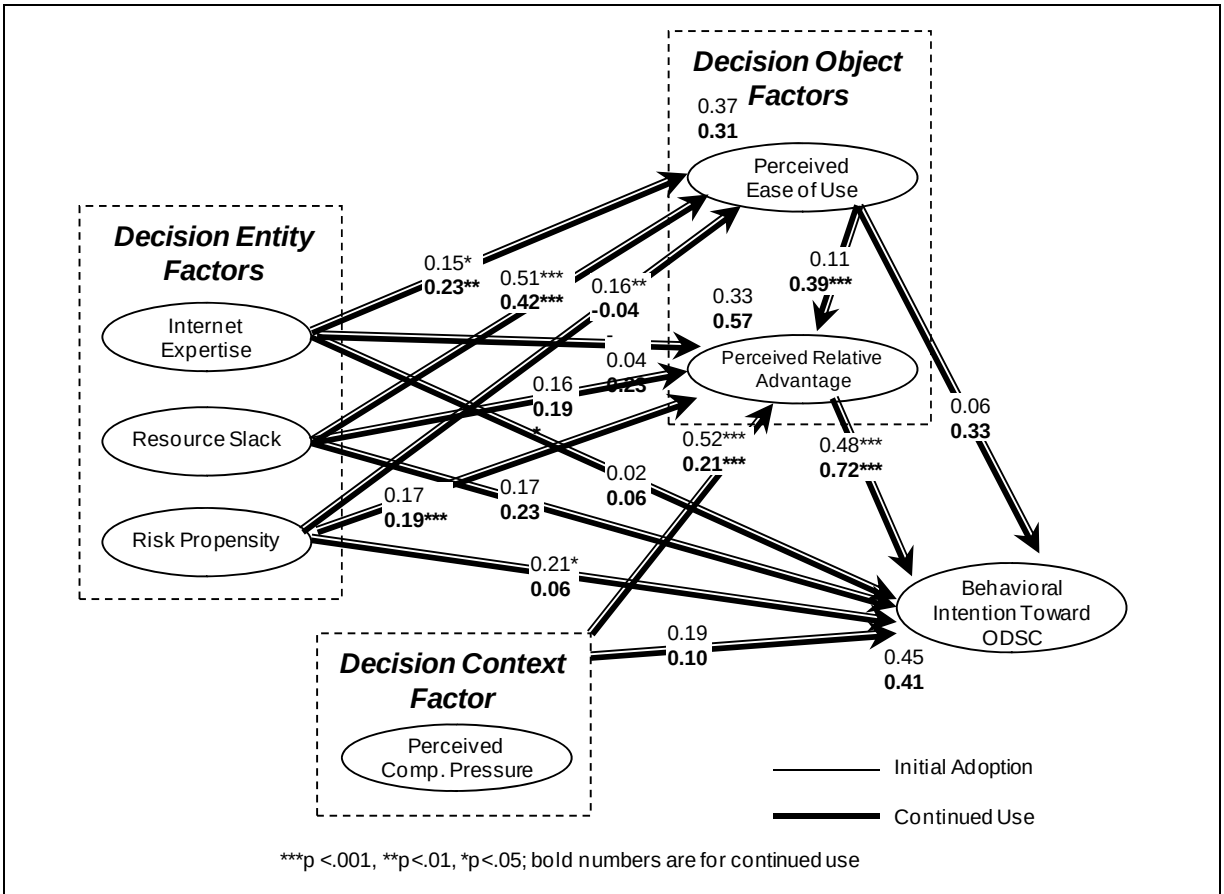

Figure 3. Path Coefficients

The R-Squares of behavioral intention (INTENTION) are 0.45 for pre-adopters and 0.41 for adopters. These indicate that for both groups, over 40 percent of the variance of the criterion variable is accounted for by the model. The R-Squares also reveal that perceived relative advantage (ADVANTAGE) is much better predicted by its antecedents in the adopters group than in the pre-adopters group (57% versus 33%).

Table 4 compares the T-statistics and hypothesis testing results for the two groups. The shaded cells illustrate the support for each hypothesis. The comparison demonstrates:

- Group Similarities: Both resource slack and expertise have positive effects on perceived ease of use in both groups. Perceived competitive pressure has an indirect impact on the continued use as well as the initial adoption of ODSCs, mediated by perceived relative advantage. Perceived relative advantage positively affects both initial adoption and continued use of ODSCs.

- Group Differences: Resource slack has an indirect effect on the continued use of ODSCs, mediated by perceived relative advantage, but it has no such effect on the initial adoption of an ODSC. Risk propensity directly impacts the initial adoption of an ODSC, but its effect on the continued use of an ODSC is indirect, mediated by perceived relative advantage. The frequently found indirect effect of perceived ease of use on the adoption of an innovation (mediated by perceived relative advantage) is demonstrated in the continued use but not in the initial adoption of ODSCs.

Table 4. Group Comparison of Decision Factors

Hyp.	Path	T-Stats. & Hyp. Support	
		Pre-adopters	Adopters
H1a	Resource Slack → Perceived Ease of Use	***6.14	***4.15
H1b	Resource Slack → Perceived Relative Advantage	1.42	***2.83
H1c	Resource Slack → Behavioral Intention	0.16	0.66
H2a	Expertise → Perceived Ease of Use	*1.90	**2.46
H2b	Expertise → Perceived Relative Advantage	0.41	1.58
H2c	Expertise → Behavioral Intention	0.27	1.12
H3a	Risk Propensity → Perceived Ease of Use	** 1.96	0.49
H3b	Risk Propensity → Perceived Relative Advantage	1.35	***2.76
H3c	Risk Propensity → Behavioral Intention	*1.91	0.57
H4	Perceived Relative Advantage → Behavioral Intention	***4.92	***4.80
H5a	Perceived Ease of Use → Perceived Relative Advantage	0.95	***4.27
H5b	Perceived Ease of Use → Behavioral Intention	0.69	0.33
H6a	Perceived Competitive Pressure → Perceived Relative Advantage	*** 7.39	***3.20
H6b	Perceived Competitive Pressure → Behavioral Intention	1.72	0.49

***p <.001, **p<.01, *p<.05; shaded cells indicate support of hypothesis

6.3. Test for Differences in Path Coefficients

For the relationships that are significant in both groups, we conducted a test for differences in path coefficients using the multi-group analysis method suggested by Chin (2000) and implemented by Keil et al. (2000). The results are reported in Table 5.

Table 5. Test for Differences in Path Coefficients

Path	Pre-Adopters (n=108)		Adopters (n=70)		Pooled Variance (Sp)	t-stat.	Sig.
	Beta	SE	Beta	SE			
Perceived Relative Advantage → Behavioral Intention	0.48	0.10	0.72	0.16	0.12	13.01	***0.000
Perceived Competitive Pressure → Perceived Relative Advantage	0.52	0.07	0.21	0.07	0.07	-28.50	***0.000
Expertise → Perceived Ease of Use	0.14	0.08	0.23	0.09	0.08	6.54	***0.000
Resource Slack → Perceived Ease of Use	0.51	0.08	0.42	0.10	0.09	-6.15	***0.000

***p <.001, **p<.01, *p<.05 (two-tailed tests)

These results show that even for the relationships that are significantly supported in both subgroups—the pre-adopters group and the adopters group—the factors' extents of impact are different. For example, while perceived competitive pressure has an indirect impact (mediated by perceived relative advantage) in both the pre-adopters and adopters groups, the extent of such impact, reflected in the path coefficients, is significantly higher in the pre-adopters group. A possible explanation is that before an SME adopts the ODSC, it is likely to be more concerned about losing its competitiveness if it does not adopt it. Competitive pressure, thus, plays a larger role in shaping its perception of the ODSC advantage. On the other hand, although perceived relative advantage significantly affects both the initial adoption and the continued use of an ODSC, the degree of such impact is significantly higher in the adopters group. The finding is intuitive as well; after an SME has already adopted an ODSC, the observed rather than anticipated relative advantage of the ODSC will play a more important role in its decision about whether it should continue its commitment to the innovation.

7. Discussion

This study examines the decision factors underlying SME adoption and continued use of online direct sales channels. The findings suggest that the initial adoption and continued use of ODSCs involve different sets of decision factors. This is consistent with findings of other studies on the adoption and continuance of IS (e.g., Karahanna, Straub, and Chervany, 1999). The knowledge of these differences is critical to enhance the formal evaluation of the initial adoption decisions. By understanding the variable relationships revealed in the adopters group, pre-adopters can mitigate a propensity to underestimate (or overestimate) the importance of different factors in their decision.

The inclination of the decision maker to take on risks given a perceived probability of reward is a conceptually appealing and empirically supported (e.g., Hage, 1999; Keil and Wallace, 2000) antecedent to innovative behaviors, as innovation is often perceived as risky. Although risk-reward and risk-innovation relationships have been studied previously in the SME context (Ballantine et al., 1993; Cosh et al., 1996; Fritz, 1989; Watson and Robinson, 2003), these studies have primarily focused on the initial adoption and neglected SMEs' post-adoption behavior. This study contributes to the literature by suggesting that risk propensity not only affects SMEs' initial adoption of ODSCs, but also influences their continued use of ODSCs. However, the patterns of effects are very different: while risk propensity directly impacts the initial adoption of an ODSC, its effect on the continued use of an ODSC is indirect, mediated by perceived relative advantage. The findings are intuitive. Before SMEs' initial adoption of an ODSC, many aspects of the innovation are still not clear to the organization—there is uncertainty and risks are high. Therefore, the SMEs' risk propensity serves as a direct driver for the initial adoption of the innovation. At the post-adoption stage, however, the SMEs have had experience with the ODSC, thus, decisions regarding whether to continue to use the ODSC will be driven more by the observed benefits than by the SMEs' risk propensity. The effect of SMEs' risk propensity, therefore, becomes indirect—reflected in its effect on the SMEs' perception of practical advantages of the ODSC.

Many earlier studies (e.g., Cragg and King, 1993; Damanpour, 1991; Lee, 2004) suggested a relationship between resource slack and adoption (or behavioral intention to adopt); however, this conclusion is not universal, as Franquesa and Brandyberry (2009) revealed no relationship between available slack and adoption and a negative relationship between potential slack (access to credit) and the adoption of ODSCs. In this study, we find a positive, mediated effect on adoption behaviors. Despite the lack of a direct effect on behavioral intention, we find resource slack to affect adoption or continued use of ODSCs by shaping SMEs' perception of perceived relative advantage and ease of use of the innovation. This generally supports the majority of extant research that shows that greater resource slack positively affects adoption; however, the extant research does not test for the possibility of these mediated relationships. These findings add additional knowledge concerning how resource slack may affect the adoption or continued use decision.

The difference between the adopter and pre-adopter groups is that, while resource slack impacts both perceived relative advantage and perceived ease of use in the adopters group, it only affects perceived ease of use in the pre-adopters group. Therefore, for both groups, having available resources to solve potential complexity issues mitigates the perception of the ease of use characteristics of ODSCs. However, the lack of an effect on perceived relative advantage in the pre-adopters group demonstrates that, for firms that have no direct experience with an ODSC, resource slack is not perceived to be important in defining the advantages of the technology. This may reflect that pre-adopters are considering the advantages in more abstract, general terms, while the adopters are considering advantages in more concrete, practical terms. The practical experience of the adopters group informs them of the need for resource slack for operating and maintaining the ODSC to gain the maximum advantages possible.

Earlier studies (e.g., Dubelaar, Sohal, and Savic, 2005; Lucchetti and Sterlacchini, 2004) have revealed a positive direct or indirect effect of knowledge and expertise on the adoption and diffusion of computer-related systems. This study reveals no direct effect of Internet expertise on behavioral intention. However, it demonstrates a significant, positive effect of Internet expertise on perceived ease of use among both pre-adopters and adopters. Such an effect is intuitive: SMEs with more Internet knowledge and expertise will naturally perceive an Internet-based sales channel as easier to use.

Regarding the two decision object factors—perceived relative advantage and perceived ease of use—this study validates findings from earlier studies (e.g., Lee, 2004; Mollenkopf et al., 2007; Yu, Ha, Choi, and Rho, 2005) that, while value-oriented variables such as perceived relative advantage invariably affect behavioral intention directly, the effect of perceived ease of use is more complicated. The study shows a direct effect of perceived relative advantage on behavioral intention in both the pre-adopters and adopters groups, but finds no such effect for perceived ease of use. Even the indirect effect of perceived ease of use is not found in both groups. In the adopters group, we find perceived ease of use to have a significant indirect effect (mediated by perceived relative advantage) on an SME's behavioral intention to continue to use an existing ODSC, however, in the pre-adopters group, we find that perceived ease of use has no such effect on an SME's perceived relative advantage of an ODSC. This may again be due to the more abstract and vicarious perceptions of pre-adopters concerning ODSCs' relative advantage. Due to this, pre-adopters may base their views more purely on the advantages believed to have been obtained by others without fully taking ease of use considerations into account. This contrasts with adopters who may consider the relative level of effort expenditure as an integral component of the relative advantages obtained. This implies, to some degree, that pre-adopters may underestimate the importance of ease of use considerations in making their adoption decisions.

Competitive pressure, a context factor, has been found in numerous studies (Barnes, Hinton, and Mieczkowska, 2003; Dholakia and Kshetri, 2004; Dubelaar, Sohal, and Savic, 2005; Zhu, Kraemer, Xu, and Dedrick, 2004; Sandy and Graham, 2007) to have a significant impact on the adoption of e-commerce related innovations. This study suggests that competitive pressure influences the continued use as well as the adoption of ODSCs. But such influences are indirect, mediated by perceived relative advantage. If a firm has little or no competition, it is likely that they will not perceive

ODSCs as giving them as much of a relative advantage as firms that operate under significant competition. This may be attributed to the fact that part of this relative advantage is likely to be derived from the firm's ability to gain advantages over these competitors.

7.1. Implications for Research

This paper makes several major contributions to knowledge in the innovation adoption and diffusion domain. First, the combination of factors from IDT, TAM, and other related frameworks in our research model answers the call for more holistic studies rather than those that apply TAM or IDT alone. Second, the research model on SMEs' initial ODSC adoption and continued use, which is proposed and empirically tested in this paper, enhances our knowledge of the adoption and use pattern of ODSCs among SMEs. Differences between these groups demonstrate the learning effect of implementation achieved by adopters and the potential for inexperienced firms to exploit this information. Third, the paper offers an extensive literature review on the adoption and continued use of innovations by SMEs, which contributes to the theoretical foundation for future research in SME innovation diffusion. Fourth, the specific focus of this research on ODSCs rather than all e-commerce technologies provides a more granular generalizability than does much of the current research on e-commerce. The varied technologies that are traditionally included as part of e-commerce differ substantially in terms of strategic impact, risk, resource requirements, and many other factors. While more specific studies such as this are not generalizable to the universe of e-commerce applications, we believe that e-commerce research has reached a point where more specific research is warranted. Studies that combine various aspects of e-commerce together may, in fact, not be fully generalizable to any specific technology.

Fifth, the measures (all at the organizational level) developed and empirically validated in this study constitute a significant contribution to future research in the adoption and diffusion of innovations by organizations, especially by SMEs. Several measures, such as perceived ease of use, risk propensity, and behavioral intention have been frequently used at the individual level. This study adapts these measures and uses them at the organizational level. This exemplifies a feasible avenue for developing and validating organizational level measures for studies on business adoption of innovations. The rationale for this extension to the organizational context is supported by researchers such as Rogers (2003), who state that their frameworks are adaptable to decision entities other than the individual. Finally, the synthesis of existing models and theory in constructing the proposed decision factors classification framework provides a simple but inclusive tool for categorizing existing innovation adoption decision factors in the literature. It will also be useful for guiding the identification of new factors in future IS adoption studies. As previous discussion points out, this is consistent with many prominent researchers' calls for different paradigms to be employed in technology adoption (or acceptance) research. Specifically, seeking to move beyond basic TAM-based research and treat the investigation of these processes more holistically.

Confusion in the unit of analysis is prevalent in studies of IS adoption by organizations. The root of such confusion is the lack of prevalent organization level IS adoption frameworks. Many of these studies maintain the original unit of analysis at the individual level even though they are clearly studying organizational adoption (Grandon and Pearson, 2004; Thong, 1999). In other studies, constructs are measured with a mixture of organization level and individual level indicators. Riemenschneider et al. (2003) include an indicator of anticipated employee frustration with the technology, which would be at the organizational level along with several other individual level indicators. Still others phrase the question ambiguously. For instance, Lee (2004, p. 60) uses a single measure, "IT is easy to use" to measure perceived ease of use. This allows the respondent the ability to determine whether the question pertains to his or her individual ease of use or whether it pertains to the organization.

Such confusion can be eliminated by developing and validating an organizational version of major individual-focused technology acceptance frameworks. Organization theorists suggest that the explanation of collective phenomena must eventually be grounded in explanatory mechanisms involving individual action and interaction (Hayek, 1952; Elster, 1989; Boudon, 1998). All

organizational level constructs, therefore, should have individual level origins (Felin and Foss, 2006). Some IS adoption researchers have attempted to adapt the variables in individual-oriented frameworks and use them at the organizational level. For instance, Nguyen and Barrett (2006) adapted perceived ease of use and perceived usefulness in the Technology Acceptance Model (TAM) and used them to examine Internet adoption by export firms (organization level). They found that organizational perceived ease of use is fully mediated by organizational perceived usefulness (similar to our relative advantage)—consistent with TAM's proposal at the individual level.

7.2. Implications for Practice

The study has useful implications for practitioners as well. The examination of ODSC adoption and continued use among SMEs provides empirical evidence regarding what drives SMEs' adoption of ODSCs at the initial adoption stage and what affects their continued use of an existing ODSC. The findings will help facilitate better decision making by business managers and policy makers on the use of ODSC among SMEs. For instance, the findings suggest that, to accelerate the adoption of ODSCs or to assure SMEs' continuous commitment to existing ODSCs, e-Business systems developers and small business governing agencies should focus on strategies that enhance and publicize ODSC values and advantages to small businesses. E-Business systems vendors may also need to consider analyzing and profiling potential SME clients based on their resource availability, risk propensity, and competitive situation.

Many researchers have lamented that much research on innovation adoption makes the dubious assumption that technology adoption is inherently "good" and should be promoted. By no means has this study intended to make a good or bad judgment on SMEs' adopting or not adopting the online direct sales channel (ODSC). Each business makes its decision with its own rationales and constraints. This study simply intends to aid the decision makers by pointing out what decision entity, decision object, and context factors are salient to similar firms and may spark them to evaluate these factors more formally in their decision making process. In identifying individual characteristics such as risk propensity that may also affect the decision, these decision makers may be more inclined to self-evaluate and appropriately compensate for these traits. This is especially important in the context of SMEs where many decisions are made by individuals whose personal traits may lead them to make sub-optimal decisions. For instance, an individual who is highly risk averse may miss opportunities, while an individual with a high risk propensity may squander resources. If decision makers can identify these traits in themselves it may lead them to make decisions that are slightly out of their comfort zones but beneficial to their firms.

Finally, especially for firms considering an initial adoption of an ODSC, the differences between findings between the pre-adopter and adopter groups can be enlightening. By understanding what current adopters view as important in forming perceptions concerning relative advantage, pre-adopters may be able to adjust their mindset to take advantage of the views of experienced firms. Specifically, in this study, we demonstrate that pre-adopters do not consider perceived ease of use and resource slack as important in their perception of relative advantage. The fact that the adopter group does find these important should lead pre-adopters to a more careful consideration of these factors in making their adoption decisions.

7.3. Limitations

Some limitations of this study must be identified. First, the study relies on a single representative from each participating SME for information about the firm, which may cause single-representative biases—the responses provided by the participant may not perfectly represent the perspectives of the whole organization. However, because the majority of our participants are owners and high-profile managers of SMEs, who generally know their own organizations well, single-representative biases should not be a serious issue in this study. Second, we draw the sample of SMEs used for this study from a single state within the United States. That may limit the generalizability of our findings. Such concerns may be eased somewhat by the fact that Ohio's SMEs seem not to be significantly different from SMEs within the overall U.S. in terms of industry and size distributions. But future studies should consider using a sample of SMEs from different regions and countries to enhance external validity.

Third, although our wave analysis reveals no evidence for non-response bias, systematic bias caused by a relatively low response rate is still possible. Finally, the effects of firm size and industry are not included as factors in this study. Since some prior research (e.g., Johnston and Wright, 2004) has shown significant differences among SMEs of different firm sizes and industries, future research should incorporate such variables as well.

7.4. Directions for Future Research

The present study can be extended in several aspects in future research. First, the ODSC sophistication is not considered in this paper. In reality, using an ODSC may involve different levels of technological sophistication. Further study is needed to explore the determinants of ODSC use sophistication among SMEs. Second, we hope this study contributes to and helps draw attention to post-adoption behavioral research, particularly at the organizational level. This study focuses only on continued use; future research is needed to examine a variety of other aspects of post-adoption behavior such as expansion. Third, due to insufficient responses, we could not include some potentially important factors in our study, particularly DE factors such as customer pressure and reseller pressure. It will be meaningful to assess the impact of these factors on the adoption and continued use of ODSCs among SMEs in future research. Fourth, we find some latent variables such as perceived ease of use and risk propensity to be significantly correlated. This confirmatory research is, necessarily, theory-driven; and since we did not find theoretical support for such relationships we did not include them in the PLS model. Future, more exploratory research may be needed to examine such relationships. Finally, echoing the calls for a paradigm shift in general technology acceptance research discussed earlier, we believe that extending the present study to examine business outcomes associated with the ODSC adoption or continued use decision is of critical importance. We do not believe that promoting a technology is inherently "good" (or "bad") and the large number of well-documented technology implementation failures demonstrates this fact. Future research should attempt to form the linkage between "how" SMEs make adoption/continuance decisions and "what" the business outcomes of those decisions are. In this way researchers can identify not only how the decisions are made but also what are the characteristics of the most (and least) successful decision scenarios. Thus, a "best practices" conclusion may be formed.

References

Abrahamson, E. and Rosenkopf, L. Institutional and competitive bandwagons: Using mathematical modeling as a tool to explore innovation diffusion. *The Academy of Management Review*, *18*, 3 (1993), 487-517.

Ajzen, I. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50,* 2 (1991). 179-211.

Armstrong, J. S. and Overton, T. S. Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, *14*, 3 (1977), 396-402.

Bagozzi, R. P. The legacy of the technology acceptance model and a proposal for a paradigm shift. *Journal of the Association for Information Systems*, *8*, 4 (2007), 244-254.

Ballantine, J. W., Cleveland, F. W. and Koeller, C. T. Profitability, uncertainty, and firm size. *Small Business Economics, 5*, 2 (1993), 87-100.

Barnes, D.; Hinton, M.; and Mieczkowska, S. Competitive advantage through e-operations. *Total Quality Management & Business Excellence*, *14*, 6 (2003). 659-675.

Benbasat, I. and Barki H. Quo vadis, TAM? *Journal of the Association for Information Systems*, *8*, 4 (2007), 211-218.

Bhattacherjee, A. Understanding information system continuance: An expectation-confirmation model. *MIS Quarterly,* 25, 3 (2001), 351-370.

Black, W. Discontinuance and diffusion: Examination of the post adoption decision process. *Advances in Consumer Research*, *10* (1983), 356-361.

Boudon, R. Social mechanisms without black boxes. In P. Hedstrom and R. Swedberg (Eds.), Social mechanisms: An analytical approach to social theory, 172-203. Cambridge University Press, Cambridge, 1998.

Bourgeois, L. On the measurement of organizational slack. *Academy of Management Review, 6*, 1 (1981), 29-39.

Brockhaus, R. H. Risk taking propensity of entrepreneurs. *Academy of Management Journal, 23,* 3 (1980), 509-520.

Byrne, B.M. A primer of LISREL: *Basic applications and programming for Confirmatory factor analytic models*. Springer-Verlag, New York, 1989.

Chin, W.W. The partial least squares approach to structural equation modeling, in Marcoulides, George A. (Ed). *Modern Methods for Business Research,* Lawrence Erlbaum Associates Publishers, Mahwah, NJ, 1998, 295-336.

Chin, W.W. Frequently Asked Questions – Partial Least Squares and PLS-Graph. Retrieved April 8, 2009, from http://disc-nt.cba.uh.edu/chin/plsfaq/plsfaq.htm (2000).

Chin, W.W., Marcolin, B.L., and Newsted, P.R. A partial least squares latent variable modeling approach for measuring interaction effects: results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information Systems Research, 14*, 2 (2003), 189-217.

Chitura, T., Mupemhi S., Dube T., and Bolongkikit J. 2008. Barriers to Electronic Commerce Adoption in Small and Medium Enterprises: A Critical Literature Review. *Journal of Internet Banking & Commerce, 13*, 2 (2008), 1-13.

Churchill, G.A. A Paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, *16*, 1 (1979), 64-73.

Cosh, A, Hughes, A., and Wood, E. Innovation in UK SMEs: causes and the consequences for firm failure and acquisition. In Zoltán J. Ács In Zoltan J. Acs, Bo Carlsson, and Charlie Karlsson (eds.) Entrepreneurship, Small and Medium Sized Enterprises and the Macroeconomy, Cambridge University Press, 1998.

Cragg, P. B. and King, M. Small-firm computing: motivators and inhibitors. *MIS Quarterly*, *17*, 1(1993), 47-60.

Damanpour, F. Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal*, *34,* 3 (1991), 555-590.

Daniel, E. and Wilson, H. Adoption intentions and benefits realised: a study of e-commerce in UK SMEs. *Journal of Small Business and Enterprise Development*, *9*, 4 (2002), 331-348.

Daniel, E., Wilson, H. and Myers, A. Adoption of e-commerce by SMEs in the UK. *International Small Business Journal*, *20*, 3 (2002), 253-270.

Davis, F. D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13,* 3 (1989), 319-339.

Dewan, R., Jing, B., and Seidmann, A. Adoption of Internet-based product customization and pricing strategies. *Journal of Management Information Systems*, *17,* 2 (2000), 9-28.

Dewar, R. D., and Dutton, J. E. The adoption of radical and incremental innovations: An empirical analysis. *Management Science*, *32*, 11 (1986), 1422-1433.

Dholakia, R. R. and Kshetri, N. Factors impacting the adoption of the Internet among SMEs, *Small Business Economics*, *23,* 4 (2004), 311-322.

Dimick, D. and Murray, V. V. Correlates of substantive policy decisions in organizations: the case of human resource management. *Academy of Management Journal, 21*, 4 (1978), 611-623.

Dubelaar C.; Sohal A.; and Savic V. Benefits, impediments and critical success factors in B2C E-business adoption. *Technovation, 25*, 11 (2005), 1251–1262.

Elster, J. Nuts and Bolts for the Social Sciences. Cambridge University Press, Cambridge, 1989.

Felin, T. and Foss, N. Individuals and organizations: Thoughts on a micro-foundations project for strategic management and organizational analysis (Working paper). Retrieved on February 26, 2010, from 10http://openarchive.cbs.dk/bitstream/handle/10398/7470/cbs%20forskningsindberetning%20smg%2039.pdf?sequence=1.

Fichman, R. G. Going beyond the dominant paradigm for information technology innovation research: Emerging concepts and methods. *Journal of the Association for Information Systems*, *5*, 8 (2004). 314-355.

Fishbein, M. and Ajzen, I. *Belief, attitude, intention, and behavior: An introduction to theory and research*. Addison-Wesley, Reading, MA, 1975.

Fisher, J.; Craig, A.; and Bentley, J. Moving from a web presence to e-Commerce: The importance of a business - web strategy for small-business owners. *Electronic Markets, 17*, 4 (2007), 253-262.

Fornell, C. and Larcker, F. D. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research 18*, 1 (1981), 39-50.

Franquesa, J. and Brandyberry, A. A. Organizational slack and information technology innovation adoption in SMEs. *International Journal of E-Business Research*, *5*, 1 (January-March 2009), 25-48.

Fritz, W. Determinants of Product Innovation Activities. *European Journal of Marketing, 23*, 10 (1989), 32-43.

Gefen, D. and Straub, D. The relative importance of perceived ease of use in IS adoption: A study of e-commerce adoption. *Journal of the Association for Information Systems*, 1 (2000), Article 8.

Goeke, R. *An examination of the effects of experience, expertise, and perceived flexibility on data warehouse use,* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Database, 2007, (UMI 3236837).

Grandon, E. E. and Pearson J.M. Electronic commerce adoption: an empirical study of small and medium US business. *Information and Management, 42*, 1 (2004), 197-216.

Guinea, A. and Markus, M. Why break the habit of a lifetime? Rethinking the roles of intention, habit, and emotion in continuing information technology use. *MIS Quarterly*, 33, 3(2009), 433-444.

Hage, J. T. Organizational Innovation and Organizational Change. *Annual Review of Sociology*, *25* (1999), 597-622.

Hamill, J. and Karl, G. Internet marketing in the internationalisation of U.K. SMEs. *Journal of Marketing Management*, *13,* 1–3 (1997), 9–28.

Hayek, F.A. The Counter Revolution of Science. University of Chicago Press, Chicago, 1952.

Houghton, K. A. and Winklhofer, H. The Effect of website and e-Commerce adoption on the relationship between SMEs and their export intermediaries. *International Small Business Journal*, *22*, 4 (2004), 369-388.

Igbaria, M., Zinatelli N., Cragg P., and Cavaye A. Personal computing acceptance factors in small firms: a structural equation model, *MIS Quarterly, 21*, 3(1997), 279-305.

Johnston, D. A., Wade M., and McClean, R. Does e-Business matter to SMEs? A comparison of the financial impacts of Internet business solutions on European and North American SMEs. *Journal of Small Business Management, 45*, 3, (2007), 354-361.

Johnston, D. A. and Wright, L. The e-business capability of small and medium sized firms in international supply chains. *Information Systems & e-Business Management, 2,* 2/3 (2004), 223-240.

Kahneman, D. and Tversky, A. Prospect theory: An analysis of decisions under risk. *Econometrica*, *47*, 2 (1979), 263-292.

Karahanna, E., Straub, D. and Chervany, N. Information technology adoption across time: A cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, *23* (1999), 183-214.

Keil, M., Tan, B.C.Y., Wei, K.K., Saarinen, T., Tuunainen, V. and Wassenaar, A. A. cross-cultural study on escalation of commitment behavior in software projects. *MIS Quarterly, 24*, 2 (2000), 299 – 325.

Keil, M. and Wallace, L. An investigation of risk perception and risk propensity on the decision to continue a software development project. *Journal of Systems & Software*, *53*, 2 (2000), 145-157.

Kerlinger, F. N. Foundations of behavioral research (2nd ed.). New York: Holt, Rhinehart, and Winston, (1973).

Kim, S.S. and N.K. Malhotra. A Longitudinal Model of Continued IS Use: An Integrative View of Four Mechanisms Underlying Postadoption Phenomena. *Management Science*, *51*, 5 (2005), 741-755.

Kline, Rex B. *Principles and practice of structural equation modeling.* Guilford Press, New York, 1998.

Kula V. and Tatoglu, E. An exploratory study of Internet adoption by SMEs in an emerging market economy. *European Business Review, 15*, 5 (2003), 324-333.

Lacovou, C,L. Benbasat, I. and Dexter, A.S. Electronic data interchange and small organizations: adoption and impact of technology. *MIS Quarterly, 19*, 4, (1995), 465-485.

Lee, J. Discriminant analysis of technology adoption behavior: A case of Internet technologies in small businesses. *Journal of Computer Information Systems*, *44,* 4 (2004), 57-66.

Levy, M, and Powell, P. Exploring SME Internet adoption: towards a contingent model. *Electronic Markets*, *13*, 2 (2003), 173-181.

Li, X. "Adoption of Online Direct Sales Channels by Small and Medium-Sized Enterprises," *Proceedings of Academy of Marketing Science Annual Conference* (2009), Baltimore, MD.

Li, X. Coping with manufacturers' dilemma in the e-commerce era: A relational model and a strategic framework. *International Journal of E-Business Research*, *6*, 4, (2010), 52-68.

Lohrke, F. T.; Franklin, G. M.; and Frownfelter-Lohrke, C. The Internet as an Information conduit. *International Small Business Journal, 24*, 2 (2006), 159–178.

Looi, H. C. E-commerce adoption in Brunei Darussalam: A quantitative analysis of factors influencing its adoption. *Communications of AIS, 15* (2005), 61-81.

Lucchetti, R. and Sterlacchini A. The adoption of ICT among SMEs: Evidence from an Italian survey. *Small Business Economies*, *23*, 2 (2004), 151-168.

March, J. G. The technology of foolishness. In J. G. March & J. P. Olsen (Eds.), Ambiguityand choice in organizations (1976), 69-81. Bergen: Universitetsforlaget.

Mardia K. Directional statistics and shape analysis. *Journal of Applied Statistics, 26* (1999), 949-958.

Mellers, B.A. and Chang, S. Representations of risk judgments. *Organizational Behavior and Human Decision Processes, 57*, 2 (1994), 167-184.

Mollenkopf, D.A.; Rabinovich, E.; Laseter, T. M.; and Boyer, K. K. Managing Internet product returns: A focus on effective service operations. *Decision Sciences, 38*, 2 (2007), 215-250.

Nguyen, T.D., Barret J.N., The adoption of internet by export firms in transitional markets. *Asia Pacific Journal of Marketing and Logistics*, *18*, 1 (2006), 29-42.

Olson, J.R. and Boyer, K. K. Factors influencing the utilization of Internet purchasing in small organizations. *Journal of Operations Management*, *21*, 2 (2003), 225-245.

Organ, D. W. and Greene, C. N. The effects of formalization on professional involvement: A compensatory process approach. *Administrative Science Quarterly*, *26*, 2 (1981), 237–252.

Parthasarathy, M. and Bhattacherjee, A. Understanding post-adoption behavior in the context of online services. *Information Systems Research, 9*, 4 (1998), 362-379.

Pavlou, P. A, and Fygenson, M. Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly*, 30, 1 (2006), 115-143.

Pflughoeft, K.A., Ramamurthy K., Soofi, E.S., Yasai-Ardekani, M. and Zahedi F. Multiple conceptualizations of small business Web use and benefit. *Decision Sciences, 34,* 3 (2003), 467-512.

Plouffe, C. R.; Hulland, J. S.; and Vandenbosch, M. Research report: richness versus parsimony in modeling technology adoption decisions--understanding merchant adoption of a smart card-based payment system, *Information Systems Research*, 12, 2 (2001), 208-222.

Podsakoff, P. M.; MacKenzie, S. B.; Lee, J.; and Podsakoff, N. P. Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies, *Journal of Applied Psychology*, 88, 5 (2003), 879–903.

Poon, S. and Swatman, P.M.C. An exploratory study of small business Internet commerce issues. *Information and Management, 35*, 1 (1999), 9-18.

Riemenschneider, C.K., Harrison, D.A., and Mykytyn P.P. Understanding it adoption decisions in small business: integrating current theories, *Information and Management, 40*, 4 (2003), 269-285.

Ringle, C., Wende, S., and Will, A. Smart-PLS Version 2.0 M2, Retrieved July 2005, from http://www.smartpls.de.

Rogers, E.M. *Diffusion of Innovations,* Free Press, New York, 1962.

Rogers, E.M. *Diffusion of Innovations,* Free Press, New York, 1983.

Rogers, E.M. *Diffusion of Innovations,* Free Press, New York, 2003.

Rosner, M. Economic determinants of organizational innovation. *Administrative Science Quarterly, 12*, 4 (1968), 614-625.

Rungtusanatham, M. (1998), Let's not overlook content validity. *Decision Line*, 10-13.

Saeed, K. and Abdinnour-Helm S. Examining the effects of information system characteristics and perceived usefulness on post adoption usage of information systems. *Information and Management, 45*, 6 (2008), 376–386.

Saffu, K., Walker, J. and Hinson, R. Strategic value and electronic commerce adoption among small and medium-sized enterprises in a transitional economy. *Journal of Business & Industrial Marketing*, 23, 6 (2008), 395-404.

Salles, M. Decision making in SMEs and information requirements for competitive intelligence. *Production Planning & Control*, 17, 3 (2006), 229–237.

Sandy, C. and Graham, P. Factors influencing the extent of deployment of electronic commerce for small-and medium-sized enterprises. *Journal of Electronic Commerce in Organizations*, 5, 1 (2007), 1-29.

Santarelli, E. and D'Altri, S. The diffusion of E-commerce among SMEs: Theoretical implications and empirical evidence. *Small Business Economics*, *21,* 3 (2003), 273-283.

SBA Office of Advocacy. Small business frequently asked questions, (2006a). Retrieved July 23, 2007, from http://www.smallbiz-enviroweb.org/sba/2006resourceguide/Resources/SBFAQ.pdf.

SBA Office of Advocacy. Small business profile: United States and small business profile: Ohio Online, (2006b). Retrieved July 20, 2007, from http://www.sba.gov/advo/research/data.html.

Schneider, S. L. and Lopes, L. L. Reflection in preferences under risk: who and when may suggest why. *Journal of Experimental Psychology: Human Perception and Performance, 12*, 4 (1986), 535-548.

Singh, J.V. Performance, slack and risk taking in organizational decision making. *Academy of Management Journal*, *29*, 3 (1986), 562-585.

Sitkin, S. B. and Pablo, A.L. Reconceptualizing the determinants of risk behavior. *Academy of Management Review*, *17*, 1 (1992), 9-38.

Teo, T. and Ranganathan, C. Adopters and non-adopters of business-to-business electronic commerce in Singapore, *Information & Management, 42*, 1 (2004), 89-103.

Thong, J. Y. L., An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems*, *15*, 4 (1999), 187-214.

To, M. L. and Ngai, E. W. Predicting the organisational adoption of B2C e-commerce: an empirical study. *Industrial Management & Data Systems*, *106*, 8 (2006), 1133-1147.

Tornatzky, L. G. and Klein, K. L. Innovation characteristics and innovation adoption-implementation: A meta analysis of findings. *IEEE Transactions on Engineering Management, 29,* 1 (1982), 28-45.

Tourangeau, R., Rips, L. J., and Rasinski, K. *The psychology of survey response*. Cambridge, England: Cambridge University Press, (2000).

Venkatesh, V. Where to go from here? thoughts on future directions for research on individual-level technology adoption with a focus on decision making. *Decision Sciences*, 37, 4 (2006), 497-518.

Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*, 3 (2003), 425-478.

Wang, S. and Chueng, W. E-Business adoption by travel agencies: Prime candidates for mobile e-Business. *International Journal of Electronic Commerce*, *8,* 3 (2004), 43-63.

Watson, J. and Robinson S. Adjusting for risk in comparing the performances of male- and female-controlled SMEs. *Journal of Business Venturing*, 1*8*, 6 (2003), 773-788.

Yu, J.; Ha, I.; Choi, M.; and Rho, J. Extending the TAM for t-commerce. *Information & Management*, *42*, 7 (2005), 965-976.

Zhu, K.; Kraemer, K.; Xu, S.; and Dedrick J. Information technology payoff in e-Business environments: An international perspective on value creation of e-Business in financial services industry. *Journal of Management Information Systems, 21*, 1 (2004), 17-54.

Zhu, K. and Kraemer K. Post-Adoption Variations in Usage and Value of E-Business by Organizations: Cross-Country Evidence from the Retail Industry. *Information Systems Research, 16*, 1 (2005) 61–84.

Appendices

Appendix A. The Inclusiveness of the Classification Model

	Decision Object Factors			Context Factors
	Benefits	Ease of Use	Complexity, Compatibility, Visibility, Triability, Result Demonstrability	Social Influences
Innovation Diffusion Theory	Relative advantage	Perceived ease of use	Complexity, Compatibility, Visibility, Triability, Result Demonstrability	
Theory of Reasoned Actions				Subjective Norm
Theory of Planned Behavior		Perceived behavior control		Subjective Norm
TAM	Perceived usefulness	Perceived ease of use		
TAM2	Perceived usefulness, Output Quality, Result demonstrability	Perceived ease of use		
Model of PC Utilization	Job fit, long-term consequences		Complexity	Social factors
Self-Efficacy Theory				Others Support, Use & Encouragement
UTAUT	Performance Expectancy	Perceived ease of use		Social influences
TAM&TPB	Perceived Usefulness	Perceived Behavior control		Subjective Norms

	Decision Entity Factors								
	Age	Gender	Attitude	Experience	Abilities (Resources)	Volunt. of use	Affect	Anxiety	Image
Innovation Diffusion Theory									
Theory of Reasoned Actions			Attitude						
Theory of Planned Behavior			Attitude						
TAM									
TAM2				Experience		Volunt. of Use			
Model of PC Utilization					Facilitating Conditions		Affect		
Self-Efficacy Theory					Self-efficacy		Affect	Anxiety	Image
UTAUT	Age	Gender		Experience	Facilitating Conditions	Volunt. of use			
TAM&TPB			Attitude						

Appendix B. Scales and Measures

Scale	Sub-sample	Survey Questions (7-point Likert-type: 1 strongly disagree; 7 strongly agree)
ADVANTAGE1	Preadopters	Selling online will increase our overall sales revenues.
	Adopters	Selling online has helped increase our overall sales revenues.
ADVANTAGE2	Preadopters	Selling online will bring us additional profits.
	Adopters	Selling online has brought us additional profits.
ADVANTAGE3	Preadopters	Selling online will help improve our ordering process.
	Adopters	Selling online has helped improve our ordering process.
COMPETITIVE1	Preadopters	Most of our competitors sell online.
	Adopters	Most of our competitors sell online.
COMPETITIVE2	Preadopters	Our main competitors are already selling successfully online.
	Adopters	Our main competitors are already selling successfully online
COMPETITIVE 3	Preadopters	Our main competitors are seizing our market share.
	Adopters	Our main competitors are seizing our market share.
EASE1 (Davis, 1989)	Preadopters	Obtaining an e-commerce website to sell our products/services will be easy.
	Adopters	Implementing an e-commerce website was easy for our firm.
EASE2 (Davis, 1989)	Preadopters	Training competent personnel to support an e-commerce system will be easy.
	Adopters	Training personnel to manage our online sales has been easy for our firm.
EASE3 (Davis, 1989)	Preadopters	Maintaining an e-commerce website will be easy for our firm (Davis, 1989).
	Adopters	Maintaining the e-commerce website has been easy for our firm.
EXPERTISE1 (Goeke, 2006)	Preadopters	Rate the level of expertise your managers have in the Internet (1=Novice, 4=Competent, 7=Expert).
	Adopters	Rate the level of expertise your managers have in the Internet (1=Novice, 4=Competent, 7=Expert).
EXPERTISE2 (Goeke, 2006)	Preadopters	Rate the level of expertise other employees have in the Internet (1=Novice, 4=Competent, 7=Expert).
	Adopters	Rate the level of expertise other employees have in the Internet (1=Novice, 4=Competent, 7=Expert).
INTENTION1 (Davis, 1989)	Preadopters	Our firm intends to sell products/services on the Internet within the next two years.
	Adopters	Our firm intends to continue sell products/services on the Internet within the next two years.
INTENTION2 (Davis, 1989)	Preadopters	I predict my firm will start to sell products/services on the Internet within the next two years.
	Adopters	I predict my firm will continue to sell products/services on the Internet within the next two years.
INTENTION3 (Davis, 1989)	Preadopters	Our firm plans to sell products/services on the Internet within the next two years.
	Adopters	Our firm plans to continue to sell products/services on the Internet within the next two years
RESOURCE1	Preadopters	Our firm already has a pretty good business website.
	Adopters	Our firm already has a pretty good business website.
RESOURCE2	Preadopters	We have the resources necessary to build an e-commerce website.
	Adopters	We have the resources necessary to run our e-commerce website.
RESOURCE3	Preadopters	We have the IT personnel necessary to maintain an e-commerce website.
	Adopters	We have the IT personnel necessary to maintain an e-commerce website.
RISK1	Preadopters	Our firm is usually willing to take risks
	Adopters	Our firm is usually willing to take risks
RISK2	Preadopters	Our senior managers are willing to take risks
	Adopters	Our senior managers are willing to take risks

Appendix C. Factor Loadings

		ADVANTAGE	COMPETITIVE	EASE	EXPERTISE	INTENTION	RESOURCE	RISK
ADVANTAGE1	Preadopters	**0.95**	0.56	0.11	0.00	0.62	-0.13	0.16
	Adopters	**0.89**	0.30	0.58	0.39	0.56	0.51	0.27
ADVANTAGE2	Preadopters	**0.95**	0.53	0.05	-0.06	0.59	-0.10	0.13
	Adopters	**0.88**	0.23	0.61	0.39	0.53	0.54	0.19
ADVANTAGE3	Preadopters	**0.76**	0.29	0.09	-0.04	0.38	-0.04	0.07
	Adopters	**0.83**	0.32	0.43	0.40	0.53	0.41	0.37
COMPETITIVE1	Preadopters	0.52	**0.93**	0.08	-0.08	0.47	-0.02	-0.03
	Adopters	0.27	**0.89**	0.25	0.11	0.20	0.11	-0.01
COMPETITIVE2	Preadopters	0.46	**0.92**	0.00	-0.07	0.38	-0.12	-0.03
	Adopters	0.31	**0.94**	0.19	0.04	0.20	0.10	0.02
COMPETITIVE3	Preadopters	0.41	**0.74**	0.04	-0.06	0.25	-0.08	-0.10
	Adopters	0.26	**0.77**	0.11	-0.06	0.06	0.02	0.03
EASE1	Preadopters	0.18	0.10	**0.85**	0.22	0.23	0.47	0.25
	Adopters	0.36	0.11	**0.79**	0.22	0.24	0.29	0.00
EASE2	Preadopters	0.00	-0.02	**0.88**	0.36	0.13	0.44	0.28
	Adopters	0.65	0.25	**0.95**	0.44	0.43	0.52	0.16
EASE3	Preadopters	0.06	0.05	**0.93**	0.26	0.10	0.58	0.16
	Adopters	0.61	0.19	**0.94**	0.41	0.38	0.54	0.03
EXPERTISE1	Preadopters	-0.02	-0.09	0.24	**0.82**	0.02	0.20	0.23
	Adopters	0.35	0.23	0.17	**0.76**	0.12	0.20	0.06
EXPERTISE2	Preadopters	-0.04	-0.05	0.30	**0.90**	0.09	0.22	0.25
	Adopters	0.42	-0.07	0.48	**0.92**	0.19	0.53	0.20
INTENTION1	Preadopters	0.53	0.33	0.13	0.10	**0.94**	0.08	0.30
	Adopters	0.56	0.17	0.38	0.18	**0.90**	0.28	0.21
INTENTION2	Preadopters	0.64	0.44	0.22	0.07	**0.97**	-0.03	0.28
	Adopters	0.58	0.23	0.44	0.12	**0.90**	0.19	0.10
INTENTION3	Preadopters	0.58	0.47	0.13	0.03	**0.96**	-0.09	0.25
	Adopters	0.28	-0.04	0.02	0.19	**0.53**	0.27	-0.12
RESOURCE1	Preadopters	-0.18	-0.13	0.23	0.04	-0.11	**0.68**	0.08
	Adopters	0.53	0.21	0.52	0.42	0.18	**0.89**	0.11
RESOURCE2	Preadopters	0.02	-0.03	0.56	0.28	0.10	**0.91**	0.18
	Adopters	0.49	0.13	0.42	0.36	0.23	**0.87**	0.23
RESOURCE3	Preadopters	-0.17	-0.07	0.53	0.22	-0.08	**0.89**	0.00
	Adopters	0.46	-0.09	0.44	0.47	0.35	**0.89**	0.20
RISK1	Preadopters	0.13	-0.09	0.28	0.30	0.29	0.12	**0.96**
	Adopters	0.30	0.05	0.12	0.17	0.16	0.20	**0.95**
RISK2	Preadopters	0.14	-0.01	0.21	0.22	0.25	0.07	**0.94**
	Adopters	0.30	-0.02	0.02	0.17	0.06	0.17	**0.93**

Appendix D. Latent Variable Correlations

		ADVANTAGE	INTENTION	COMPETITIVE	EASE	EXPERTISE	RESOURCE	RISK
ADVANTAGE	Preadopters	1.00						
	Adopters	1.00						
INTENTION	Preadopters	0.61***						
	Adopters	0.62***	1.00					
COMPETITIVE	Preadopters	0.53***	0.43***					
	Adopters	0.32***	0.19	1.00				
EASE	Preadopters	0.09	0.17	0.05				
	Adopters	0.63***	0.41***	0.22	1.00			
EXPERTISE	Preadopters	-0.03	0.07	-0.08	0.31**			
	Adopters	0.46***	0.19	0.05	0.42***	1.00		
RESOURCE	Preadopters	-0.11	-0.02	-0.08	0.56***	0.24*		
	Adopters	0.56***	0.29**	0.10	0.52***	0.47***	1.00	
RISK	Preadopters	0.14	0.29**	-0.05	0.26**	0.28**	0.10	
	Adopters	0.32***	0.12	0.01	0.08	0.18	0.20	1.00

***p <.001, **p<.01, *p<.05

Appendix E. Descriptive Statistic and Comparison of Means Imogorov-Smirnov Test for Differences (Pre-Adopters vs. Adopters)

	Pre-Adopters (n=108)		Adopters (n=70)		Kolmogorov-Smirnov Test	
LVs	Mean	Std. Dev.	Mean	Std. Dev.	KS Z-Score	Asymp. Sig.
EXPERTISE	4.59	1.23	5.07	1.08	1.58	.014*
RESOURCE	3.19	1.88	4.68	1.64	2.95	.000***
RISK	4.51	1.79	5.35	1.43	2.20	.000***
EASE	3.48	1.80	4.55	1.59	2.28	.000***
ADVANTAGE	3.61	1.90	4.68	1.56	1.73	.005**
COMPETITIVE	2.63	1.56	4.05	1.63	2.50	.000***
INTENTION	3.35	2.19	5.93	1.23	3.91	.000***

About the Authors

Xiaolin LI is an assistant professor of e-Business and Technology Management at Towson University. He received his Ph.D. in Business Administration (major: management systems) from Kent State University. Prior to his appointment with Towson University, he taught management and information systems at Butler University and University of Akron. His research interests are the adoption, continuation, and valuation of technological innovations, and global strategies. His research has been accepted for publication in journals such as Journal of the Association for Information Systems, International Journal of Operational Research, Journal of Information Systems Education, International Journal of Learning and Intellectual Capital, and International Journal of E-Business Research. His research has won the "Distinguished Research Paper Award" (in innovative education track) from the DSI 40th Annual Conference (2009) and "Honorable Mention Best Student Paper Award" from Midwest DSI Annual Conference (2006). He is an associate editor for Journal of Global Commerce Research.

Marvin D. TROUTT is a Distinguished Scholar professor in the Department of Management and Information Systems, Kent State University, and a Fellow of the Decision Sciences Institute. Previously he was Rehn Research Professor at Southern Illinois University at Carbondale and was Visiting Fellow at the Hong Kong Polytechnic University 1994-1995. He received the PhD from the University of Illinois at Chicago in 1975. He has directed over 20 doctoral dissertations. His research has appeared in over 200 articles, book chapters and proceedings including such journals as Decision Sciences, Decision Support Systems, Encyclopedia of Statistical Sciences, European Journal of Operational Research, Journal of Knowledge Management, Journal of the Association of Information Systems, Management Science, Operations Research, and Organizational Research Methods, He has coauthored two books, on applied probability and Supply Chain Life Cycle management, respectively. He has participated in research grants from Southern Illinois University, Kent State University and the Hong Kong Polytechnic University.

Alan BRANDYBERRY is an Associate Professor of Information Systems at Kent State University (Kent, Ohio). He has been involved in Information Systems research for 14 years and has 17 published or forthcoming journal articles, many in journals considered amongst the top in the field, which include Journal of the Association for Information Systems, Decision Sciences Journal, European Journal of Operational Research, and Organizational Research Method. He has also published 21 conference proceedings and has been involved in 40 conference presentations.

Tuo WANG is an Associate Professor of Marketing with Kent State University, Kent, Ohio. He has a Ph.D. in Business Administration (Major in Marketing) from Joseph M. Katz Graduate School of Business, University of Pittsburgh. He holds an M.S. in Resource Economics from University of Maine and a Bachelor of Economics from Sichuan University. His research interests include pricing, auction, and E-commerce. His research has been published in journals such as Journal of Marketing Research, Management Science, and Electronic Markets.