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RESEARCH ARTICLE

UNDERSTANDING AND PREDICTING ELECTRONIC COMMERCE ADOPTION: AN EXTENSION OF THE THEORY OF PLANNED BEHAVIOR[1]

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Abstract

This paper extends Ajzen's (1991) theory of planned behavior (TPB) to explain and predict the process of e-commerce adoption by consumers. The process is captured through two online consumer behaviors: (1) getting information and (2) purchasing a product from a Web vendor. First, we simultaneously model the association between these two contingent online behaviors and their respective intentions by appealing to consumer behavior theories and the theory of implementation intentions, respectively. Second, following TPB, we derive for each behavior its intention, attitude, subjective norm, and perceived behavioral control (PBC). Third, we elicit and test a comprehensive set of salient beliefs for each behavior.

A longitudinal study with online consumers supports the proposed e-commerce adoption model, validating the predictive power of TPB and the proposed conceptualization of PBC as a higher-order factor formed by self-efficacy and controllability. Our findings stress the importance of trust and technology adoption variables (perceived usefulness and ease of use) as salient beliefs for predicting e-commerce adoption, justifying the integration of trust and technology adoption variables within the TPB framework. In addition, technological characteristics (download delay, Website navigability, and information protection), consumer skills, time and monetary resources, and product characteristics (product diagnosticity and product value) add to the explanatory and predictive power of our model. Implications for Information Systems, e-commerce, TPB, and the study of trust are discussed.

Keywords: Theory of planned behavior, perceived behavioral control, self-efficacy, controllability, technology adoption, technology acceptance model, trust, electronic commerce, consumer behavior

Introduction

Business-to-consumer (B2C) e-commerce is the activity in which consumers get information and purchase products using Internet technology (Olson and Olson 2000). The potential benefits of e-commerce have been widely touted (e.g., Gefen et al. 2003). However, for these information technology-enabled benefits to materialize, consumers must first adopt online activities, such as getting information and purchasing products from commercial websites. B2C e-commerce adoption—the consumer's engagement

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in online exchange relationships with Web vendors—goes beyond the realm of traditional marketing, and it must thus be understood from the viewpoint that online consumers are simultaneously IT users (Koufaris 2002). According to Taylor and Todd (1995b), IT usage encompasses not only use of hardware and software, but also the services that surround the IT and the people and procedures that support its use. B2C e-commerce thus presents a unique opportunity to examine a user's interaction with a complex IT system.

E-commerce adoption is an instance of IT acceptance and use within a setting that combines technology adoption with marketing elements, and it thus requires distinct theorization within the information systems literature. However, despite an emerging interest among IS researchers toward the B2C e-commerce phenomenon, there is only a limited and fragmented understanding of online consumer behavior. The purpose of this study is to theoretically propose and empirically test a set of factors that integrate technology adoption with marketing and economic variables to enhance our understanding of online consumer behavior.

B2C e-commerce has some notable differences compared to traditional consumer behavior. First, the spatial and temporal separation between consumers and Web vendors increases fears of seller opportunism due to product and identity uncertainty (Ba and Pavlou 2002). Second, personal information can be easily collected, processed, and exploited by multiple parties not directly linked to the transaction. Third, consumers must actively engage in extensive IT use when interacting with a vendor's website, which has become the store itself (Koufaris 2002). Fourth, there are concerns about the reliability of the open Internet infrastructure that Web vendors employ to interface with consumers (Rose et al. 1999). These differences stress the uncertainty of the online environment and emphasize the importance of consumer trust and the significance of IT adoption. More importantly, they reduce consumers' perception of control, confidence, and effortlessness over online activities, creating a barrier to e-commerce adoption. Therefore, compared to traditional consumer behavior, perceived behavioral control (PBC), as described in the theory of planned behavior (TPB) (Ajzen 1991), is likely to play a critical role in B2C e-commerce.

TPB is a well-researched model that has been shown to predict behavior across a variety of settings. As a general model, it is designed to explain most human behaviors (Ajzen 1991). Hence, it is reasonable to expect that a TPB-based model could effectively explain online consumer behavior. We thus create an extended version of TPB to predict two prevalent online behaviors: *getting information* and *purchasing products from Web vendors*. This study aims to predict these two behaviors by examining the major constructs of TPB (attitude and PBC) and their most important antecedents. This results in a comprehensive, yet parsimonious model that attests to the influential role of PBC, while identifying and validating important factors that are consistent with the TPB nomological structure. Moreover, the derived model explains a substantial portion of the variance in e-commerce adoption. In summary, this study provides conceptual clarity and empirical validation on the following issues:

1. Adoption of B2C e-commerce is not viewed as a monolithic behavior, but is rather proposed of both *purchasing* and *getting information*. Since TPB has not been used to simultaneously predict related behaviors, by modeling these two online behaviors, we theoretically extend TPB.

2. PBC is a key determinant of both focal e-commerce behaviors. To the best of our knowledge, most e-commerce studies do not account for PBC (e.g., George 2002), nor has a set of antecedents of PBC ever been theoretically advanced or empirically examined.

3. PBC is viewed as a two-dimensional construct formed by two underlying dimensions (*self-efficacy* and *controllability*), allowing a more detailed examination of external control beliefs.

4. Trust is viewed as an antecedent of both attitude and PBC, and thereby integrated within the proposed TPB model.

5. Most factors are empirically shown to be IT-related (e.g., usefulness, ease of use, information protection), or within the IS domain (e.g., trust, navigability), highlighting the key role of IT in online consumer behavior.

The paper proceeds as follows: the next section discusses the two e-commerce behaviors, describes the TPB framework and the nature and role of PBC, and links TPB perceptions with intentions and behaviors. The following section proposes and describes the elicited external beliefs and justifies how they link to TPB. The next two sections present the research methodology and results. The final section discusses the study's findings, contribution, and implications.

Electronic Commerce Adoption

Description of Online Consumer Behaviors

Electronic commerce adoption is broadly described as the consumer's engagement in online exchange relationships with Web vendors. From a consumer behavior standpoint, getting product information and purchasing products are generally viewed (among other activities) as the two key online consumer behaviors (Gefen and Straub 2000). While most e-commerce studies have largely focused on product purchasing, online consumer behavior is not monolithic since consumers must first engage in getting product information before purchasing. Choudhury et al. (2001) argue that consumers do not make a single, inclusive decision, but they rather consider two distinct stages: getting product information and then purchasing the product. Gefen and Straub (2000) also distinguish between the two behaviors by arguing that getting information is an activity intrinsic to the IT since the Web system itself presents the

product information. Product purchasing, on the other hand, is a task extrinsic to the IT since the Web system primarily provides the means to achieve the purchase.

Getting information involves the transfer of information from the Web vendor to the consumer through browsing the vendor's website. Getting information has been referred to as browsing or window-shopping (Gefen 2002). The value of online information search has been widely acknowledged (Bellman et al. 1999) since it is critical for learning about product specifications and potential alternatives, determining requirements, and gaining sufficient knowledge to make well-informed decisions (Choudhury et al. 2001). Product purchasing refers to the procurement of a product by providing monetary information in exchange for the focal good. In addition to monetary information, product purchasing usually involves providing consumer information (e.g., address information, product preferences).[2]

These two behaviors, getting information and product purchasing, constitute the major part of long-held consumer behavior models. Engel et al. (1973) describe a five-stage *buyer decision-making process* that includes problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior. Information search corresponds to getting information and purchase decision to product purchasing. Ives and Learmonth (1984) propose the *customer resource life cycle* (CRLF) with three key stages: prepurchase, during purchase, and post-purchase. Getting information is a prepurchase activity, while product purchasing corresponds to during purchase activities. Similarly, Kalakota and Whinston (1997) introduce the *consumer mercantile model* (CMM) that consists of three phases: prepurchase interaction, purchase, and post-purchase interactions. Prepurchase interaction consists of product search, while comparison-shopping corresponds to getting information. Choudhury et al. (2001) describe four transaction stages: requirements determination, vendor selection, purchase, and after-sales service. Getting information corresponds to requirements determination, and product purchasing to purchase. In sum, we focus on two behaviors—getting information and product purchasing—that largely determine e-commerce adoption.[3]

The Theory of Planned Behavior

TPB (Figure 1) is an extension of the theory of reasoned action (TRA) (Ajzen and Fishbein 1980). TPB has been one of the most influential theories in explaining and predicting behavior, and it has been shown to predict a wide range of behaviors (Sheppard et al. 1988).

According to TRA, the proximal determinant of a *behavior* is a behavioral *intention*, which, in turn, is determined by *attitude* (A) and *subjective norm* (SN). Attitude captures a person's overall evaluation of performing the behavior; SN refers to the person's perception of the expectations of important others about the specific behavior. Finally, the antecedents of attitude and SN are a set of underlying attitudinal (b_i) and normative beliefs (n_i), respectively. Attitudinal beliefs are assessments about the likelihood of the behavior's consequences; normative beliefs are assessments about what important others might think of the behavior. Attitude and SN are described via an expectancy-value formula:

$$A \propto \sum b_i \cdot e_i \quad (1)$$

$$SN \propto \sum n_i \cdot m_i \quad (2)$$

Where: e_i is the person's subjective evaluation of the desirability of the outcome, and

m_i is the person's motivation to comply with important others.

Recognizing that most human behaviors are subject to obstacles, Ajzen (1991) introduced TPB, which generalizes TRA by adding a third perception: *perceived behavioral control* (PBC). A set of control beliefs (c_i) and their perceived power (p_i) (to facilitate or inhibit the performance of a behavior) determine PBC through an expectancy-value formula:

$$PBC \propto \sum c_i \cdot p_i \quad (3)$$

Behavioral Intentions and Actual Behavior

Behavioral intentions are motivational factors that capture how hard people are willing to try to perform a behavior (Ajzen 1991). TPB suggests that behavioral intention is the most influential predictor of behavior; after all, a person does what she intends to do. In a meta-analysis of 87 studies, an average correlation of .53 was reported between intentions and behavior (Sheppard et al. 1988). Following TPB, we expect a positive relationship for our two focal behaviors—getting information and purchasing—and their respective intentions.

[2]The purchasing process may be supplemented by automatic information extraction through cookies and data mining tools. However, it is beyond the scope of this study to account for this type of information sharing, which is not related to consumer behavior.

[3]We recognize the existence of other e-commerce activities, such as fulfillment and repeat buying. Yet, fulfillment is a vendor's behavior (Kalakota and Whinston 1997). Even if post-purchase experience influences future behaviors, for predicting a specific behavior, the proposed TPB variables are supposed to take into account all previous experiences (Ajzen 1991). Most important, consumer post-purchase behavior is contingent upon fulfillment, which cannot be predicted before purchase.

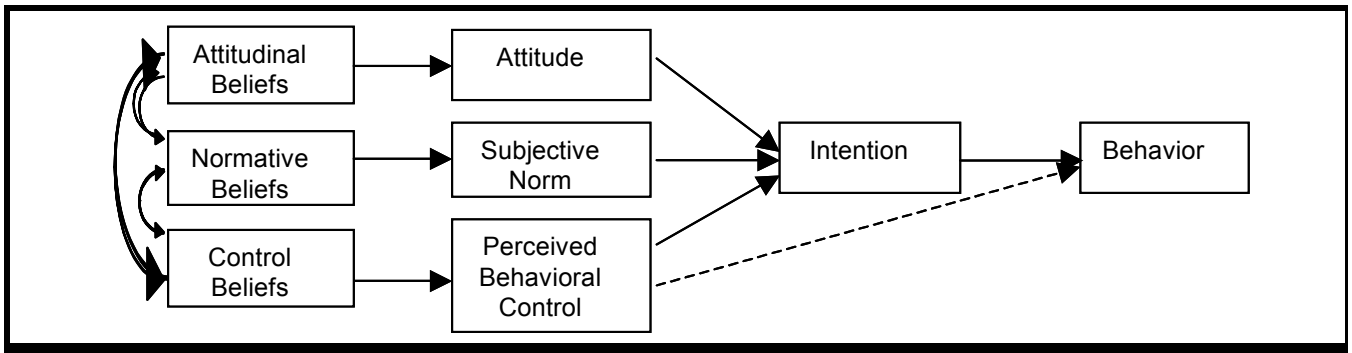

Figure 1. The Theory of Planned Behavior (Adapted from Ajzen 1991)

Connecting Getting Information and Product Purchasing

In the social psychology literature, many researchers model related behaviors using the TPB framework, but these behaviors are always modeled independently, without any attempt to capture the extent of their relationship (e.g., Povey et al. 2000). This raises important questions: Can two related behaviors be modeled simultaneously within the TPB framework? If so, how? Through which TPB constructs should two related behaviors be connected? In principle, TPB only applies at one level of specificity. How to relate one behavior to another remains a crucial open question (personal communication with I. Ajzen 2003).

To explain the relationship between the two focal behaviors, we draw upon three different aspects of consumer behavior. First, product purchasing is contingent upon getting information. This notion is captured in the buyer's decision making model (Engel et al. 1973), the CRLF (Ives and Learmonth 1984), and the CMM (Kalakota and Whinston 1997), which assume a sequential relationship between getting information and purchasing. Second, getting information facilitates purchases. For example, Kim and Benbasat (2003) argue that consumers engage in getting information to reduce the uncertainty of product purchasing. Third, getting information influences purchasing. This is captured in the theory of mere exposure (Zajonc 1968), which holds that the frequency of exposure facilitates a behavior. Empirical studies (Choudhury et al. 2001; Gefen 2002) report a positive correlation between getting information and purchasing. Therefore, we suggest

H1: Getting product information from a vendor's website positively influences purchasing a product from that Web vendor.

To link behavioral intentions between getting information and product purchasing, we refer to Gollwitzer's (1999) theory of *implementation intentions*, which are self-regulatory strategies that aim to drive a goal-oriented behavior. According to the theory, a goal-driven behavior automatically activates a set of goal-enabling (implementation) intentions that help realize the behavior (Sheeran and Orbell 1999). We view purchasing a specific product from a particular Web vendor as the goal behavior, while getting information about the product from the Web vendor is viewed as a means to achieve the goal behavior (implementation intention). Therefore, a goal intention to purchase a product from a Web vendor activates an intention to get information about that product from the vendor's website.[4] For example, a student that intends to buy a textbook from Amazon is most likely to visit Amazon to get price information about the textbook. In terms of the temporal order, consumers first form the intention to purchase a product to fulfill a particular need, and they *then* form the implementation intentions to facilitate fulfilling the need. Therefore, the product purchasing (goal) intention precedes and drives the getting product information (implementation) intentions. Salisbury et al. (2001) show that intentions to purchase relate to intention to get information. The preceding arguments suggest

H2: Intentions to purchase a product from a Web vendor positively influence intentions to get information about the product from the vendor's website.

Attitude

Attitude has long been shown to influence behavioral intentions (Ajzen and Fishbein 1980). This relationship has received substantial empirical support. With regard to the focal behaviors, attitude toward getting information and product purchasing is defined as the consumer's evaluation of the desirability of using a website to get information and purchase products from a Web vendor, respectively. Using a deductive logic, favorable attitude is likely to

[4]Gollwitzer's (1999) theory suggests that a goal behavior can trigger several implementation intentions. Intention to purchase a product from a specific Web vendor triggers intentions to get product information, not only from the specific vendor, but also from other sources. Both implementation intentions are potential consequences of the goal behavioral intention, but the intention to get information about a specific product from a specific Web vendor is more likely to occur, and it is thus examined.

encourage consumers to get information and purchase products from a vendor.

Subjective Norm

SN suggests that behavior is instigated by one's desire to act as important referent others act or think one should act. Applied to the two focal behaviors, SN reflects consumer perceptions of whether these two behaviors are accepted, encouraged, and implemented by the consumer's circle of influence. The literature suggests a positive relationship between SN and intended behavior, and empirical work has shown that SN influences behavioral intentions toward system use (Karahanna et al. 1999). A positive relationship between SN and intentions to get information and purchase products from a Web vendor is thus expected.

Perceived Behavioral Control

PBC is a topic that has been debated in the social psychology literature (for a review, see Trafimow et al. 2002). This paper sheds light on the nature and role of PBC by (1) clarifying its role in TPB, (2) describing its underlying dimensions, and (3) proposing a parsimonious model that integrates its underlying dimensions and their antecedents into a coherent model.

The Role of PBC in TPB

PBC is defined as a person's perception of how easy or difficult it would be to carry out a behavior (Ajzen 1991). To differentiate PBC from attitude, Ajzen (2002b) emphasized that PBC denotes a subjective degree of control over the performance of a behavior and *not* the perceived likelihood that performing the behavior will produce a *given outcome*. Ajzen suggested that PBC "should be read as *perceived control over the performance of a behavior*" (2002b, p. 668). Therefore, PBC is the consumer's perceived ease or difficulty of getting product information from a vendor's website and purchasing a product from a Web vendor, respectively.

In general, PBC plays a dual role in TPB. First, along with attitude and SN, it is a co-determinant of intention. Second, together with intention, it is a co-determinant of behavior. Support for the role of PBC on intention and behavior is provided by Mathieson (1991) and Taylor and Todd (1995b). We thus suggest

H3a: PBC over getting information from a Web vendor positively influences (1) intention *and* (2) actual behavior toward getting product information from that Web vendor.

H3b: PBC over product purchasing from a Web vendor positively influences (1) intention *and* (2) actual behavior toward product purchasing from the Web vendor.

Underlying Dimensions of PBC

Since the early days of TPB, there has been some ambiguity surrounding the nature of PBC. Recently, questions regarding its nature and measurement have been attracting a lot of attention (e.g., Ajzen 2002b; Trafimow et al. 2002). In particular, empirical findings have cast doubt on Ajzen's (1991) original assertion that PBC is a unitary construct, suggesting instead that PBC has two distinct dimensions: *self-efficacy* (SE) and *controllability*.[5] While the conceptualization of SE and controllability is still controversial, there is an emerging consensus that the two are the underlying dimensions of PBC. We offer the following definitions:

- **Self-Efficacy:** Following Bandura (1986), we define SE as *individual judgments of a person's capabilities to perform a behavior*. Applied to e-commerce, SE describes consumers' judgments of their own capabilities to get product information and purchase products online.

- **Controllability:** We follow Ajzen (2002b) to define controllability as *individual judgments about the availability of resources and opportunities to perform the behavior*. Applied to e-commerce, controllability describes consumers' perceptions of whether getting information and purchasing products online is completely up to them because of the availability of resources and opportunities.

The Nature of Perceived Behavioral Control

Despite empirical evidence that SE and controllability can be manipulated differently and can be reliably distinguished across behaviors (e.g., Cheng and Chan 2000), Ajzen (2002b, p. 696) maintains that "the fact that it is possible to reliably distinguish between two different types of PBC—SE and controllability—does not invalidate the unitary nature of the [PBC] construct." To bridge this inconsistency, he proposes a two-level *hierarchical model* to describe PBC as an "overarching, superordinate construct" (p. 697).

Hierarchical or higher-order models are used to explain the interrelations among lower-order factors that constitute an integrative latent construct. Higher-order models provide a more coherent description of multiple facets of a complex phenomenon that could be described by a unitary factor (Law et al. 1998). The relationships between lower and higher order constructs can be *reflective* or *formative*. While reflective structures assume that the

[5]While the SE and controllability differ in their predictive validity (e.g., Conner and Armitage 1998), there is no evidence to support the common view that SE reflects internal factors whereas controllability reflects beliefs about external factors (Ajzen 2002b).

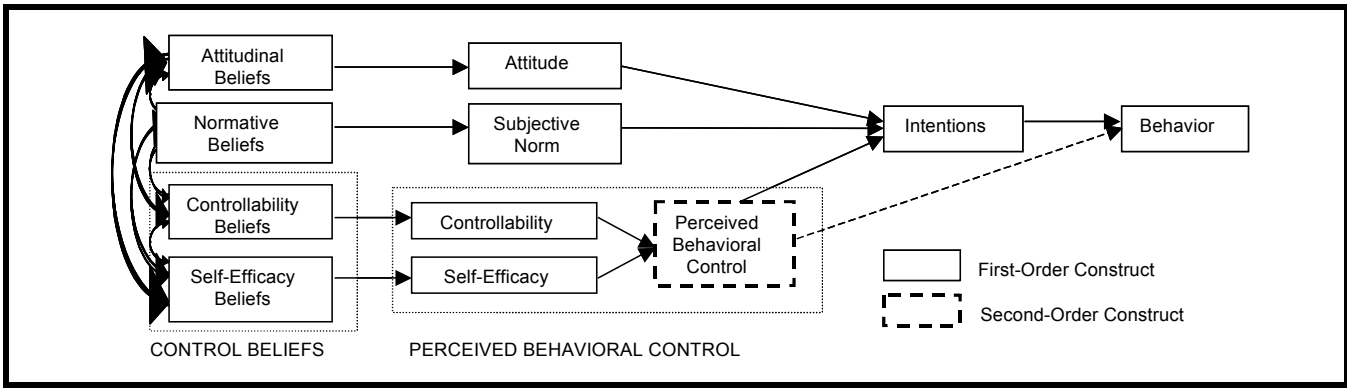

Figure 2. The Proposed Extension of the Theory of Planned Behavior

latent second order construct *causes* the first order factors, formative structures assume that the second order construct is caused by the first order factors (for a review, see Edwards 2001).

Figure 2 depicts our proposed extension of TPB with PBC viewed as a second-order factor *formed* by the first-order dimensions of SE and controllability.

The rationale for a formative model is based on the notion that SE and controllability are dynamic concepts (Bandura 1986), not stable traits. As dynamic concepts, they are likely to change over time and be manipulated differently by other factors (Trafimow et al. 2002). Hence, PBC cannot equally cause SE and controllability, thus rendering a reflective model unlikely. Moreover, since a change in one of the lower-order factors does not necessarily imply an equal change in the other, a formative model is deemed more likely.

In our endeavor to comprehensively predict the two key e-commerce behaviors, the proposed TPB extension allows for a thorough prediction of PBC through its underlying dimensions and their respective antecedents, while maintaining a parsimonious view of PBC. The following section elicits the antecedents of PBC through its two underlying dimensions, in addition to eliciting the antecedent beliefs of attitude.

Eliciting External Beliefs

TPB includes three categories of external beliefs: *attitudinal*, *normative*, and *control*. These beliefs are scenario specific and *a priori* cannot be generalized. Hence, for each new behavior, one must identify five to nine salient beliefs for each behavior that are context and population specific (Ajzen and Fishbein 1980).

We conducted a belief elicitation study using an open-ended questionnaire, following Ajzen's (2002a) procedure. The aim was to freely elicit the most salient attitudinal and control beliefs, which correspond to specific open-ended questions (Table 1). Normative beliefs were not elicited since prior studies showed that SN has a weak role in online behaviors (George 2002). We solicited the key drivers for each behavior from a convenience sample of 56 participants, which included faculty, staff, and students of a major university in the United States. Their responses are sorted based on the frequency mentioned (Tables 2 and 3). We then chose the beliefs that exceeded a 20 percent frequency cutoff, as prescribed by Ajzen and Fishbein (1980, p. 68) (presented in bold in the tables).

The resulting set of beliefs span a wide range of characteristics, which we grouped into six categories for better exposition: (1) trust in Web vendor, (2) technology acceptance, (3) consumer resources, (4) technological characteristics, (5) product characteristics, and (6) consumer skills. These categories were derived based on literature grounding and practical empiricism. For *getting information*: (1) the attitudinal beliefs are trust, perceived usefulness and ease of use; (2) the controllability beliefs are trust, ease of use, time resources, download delay, and website navigability; and (3) the SE beliefs are ease of use and skills. For *purchasing*: (1) the attitudinal beliefs are trust, usefulness, ease of purchasing, and product value; (2) the controllability beliefs are trust, ease of purchasing, monetary resources, product diagnosticity, and information protection; and (3) the SE beliefs are ease of use and skills. Figure 3 depicts our proposed model.

TPB can aggregate beliefs to create measures of attitude, SN, and PBC (Ajzen and Fishbein 1980). This aggregation has been criticized for not identifying specific factors that might predict a behavior (e.g., Taylor and Todd 1995a) and for the biases it may create (e.g., Karahanna et al. 1999). The idea that TPB beliefs can be decomposed into multidimensional constructs has been credited to Taylor and Todd (1995b), who introduced the decomposed TPB (DTPB). While we stay faithful to TPB, we decompose the derived beliefs following DTPB to provide a better understanding of each behavior. In doing so, we aim not only to assure high explanatory and predictive validity, but also to select managerially amenable factors. We also use another variation of TPB to permit cross-over

Table 1. Questionnaire for Eliciting External Salient Beliefs

Attitudinal Beliefs (Getting Information)	1. *Getting information* about this particular product from this vendor's website in the next 30 days: 1a. What do you believe are the *advantages* of doing this? 1b. What do you believe are the *disadvantages*?
	2. Anything else you associate with your *getting information* about this product from this vendor's website?
Control Beliefs (Getting Information)	3. What factors or circumstances would *enable* you to *get information* about this product from this vendor's website?
	4. What factors or circumstances would *make it difficult* for you to *get information* about this product from this vendor's website?
	5. Are there any other issues (barriers or facilitating conditions) that come to mind when you think about *getting information* about this product from this vendor's website?
Attitudinal Beliefs (Purchasing)	6. *Purchasing* the particular product from this Web vendor in the next 30 days: 6a. What do you believe are the *advantages* of doing this? 6b. What do you believe are the *disadvantages*?
	7. Anything else you associate with your *purchasing* this product from this Web vendor?
Control Beliefs (Purchasing)	8. What factors or circumstances would *enable* you to *purchase* this product from this Web vendor?
	9. What factors or circumstances would *make it difficult* for you to *purchase* this product from this Web vendor?
	10. Are there any other issues (barriers or facilitating conditions) that come to mind when you think about your *purchasing* this product from this Web vendor?

Table 2. Frequency of Elicited Beliefs (Getting Information)

Attitudinal Beliefs	Frequency (%)	Control Beliefs	Frequency (%)
Trust – Getting Information	**37 (66%)**	**Getting Information Skills**	**31(55%)**
Perceived Ease of Getting Info	**33 (59%)**	**Perceived Ease of Getting Info**	**30 (54%)**
Perceived Usefulness of Getting Info	**25 (45%)**	**Trust – Getting Information**	**24 (43%)**
Download Delay	**14 (25%)**	**Download Delay**	**21 (38%)**
Perceived Risk of Getting Information	6 (11%)	Time Resources	18 (32%)
Perceived Enjoyment	5 (8%)	Website Navigability	12 (21%)
Product Variety	5 (8%)	Website Features (e.g., search engine, FAQ)	7 (13%)
Instant Gratification	2 (4%)	Website Personalization	3 (5%)

Table 3. Frequency of Elicited Beliefs (Purchasing)

Attitudinal Beliefs	Frequency (%)	Control Beliefs	Frequency (%)
Perceived Usefulness of Purchasing	**33 (59%)**	**Monetary Resources**	**41 (73%)**
Perceived Ease of Purchasing	**32 (57%)**	**Product Diagnosticity**	**33 (59%)**
Trust – Purchasing	**17 (30%)**	**Perceived Ease of Purchasing**	**28 (57%)**
Product Value	**15 (27%)**	**Product Value**	**25 (45%)**
Monetary Resources	**14 (25%)**	**Trust - Purchasing**	**22 (39%)**
Product Diagnosticity	**13 (23%)**	**Information Protection**	**18 (32%)**
Product Quality	8 (14%)	Purchasing Skills	12 (21%)
Perceived Risk of Purchasing	7 (13%)	Delayed Gratification	3 (5%)
Product Variety	2 (4%)	Quick Pay Availability (e.g., one-click pay)	3 (5%)

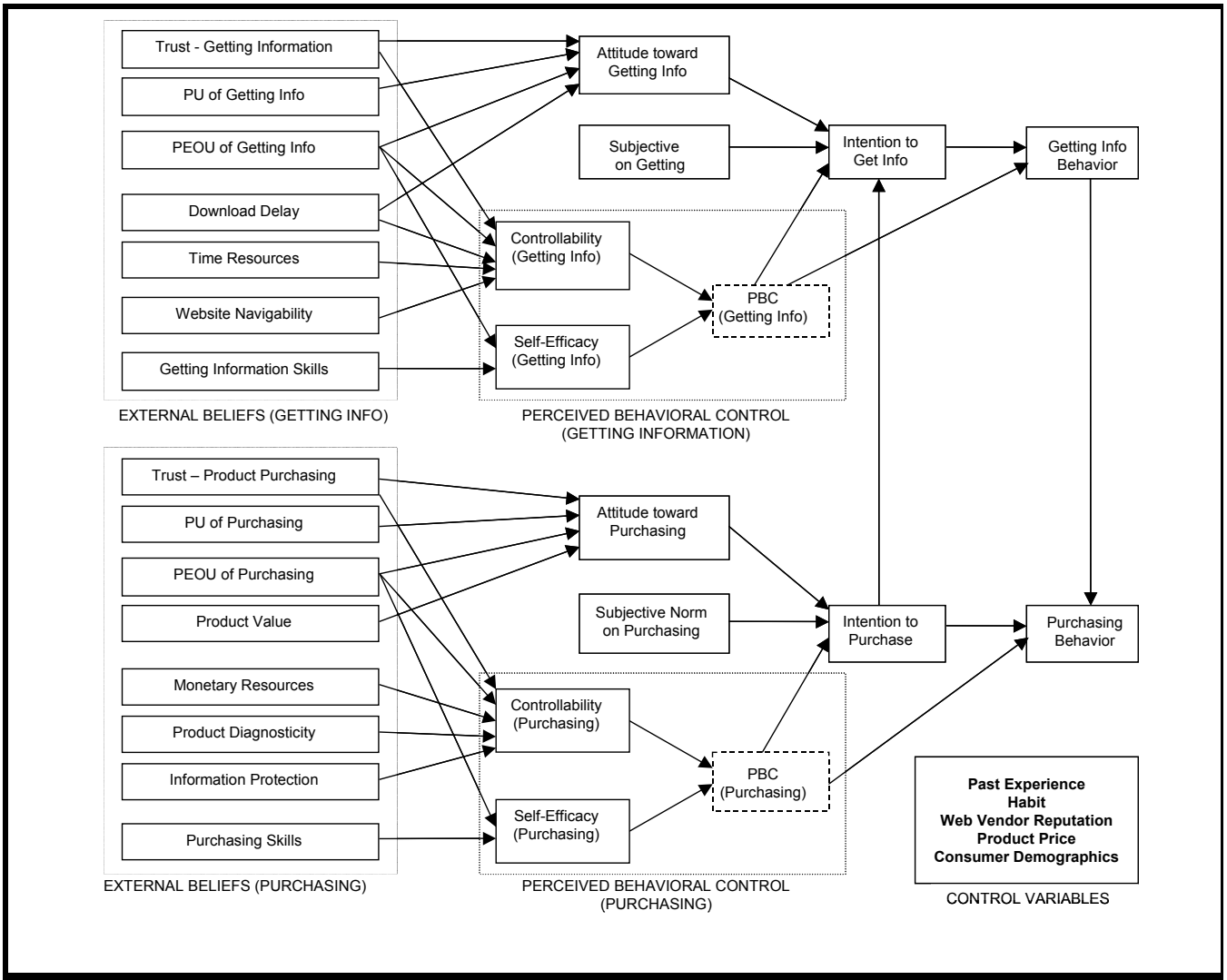

Figure 3. The Proposed Research Model

effects between beliefs and perceptions (Taylor and Todd 1995a). For example, trusting beliefs may simultaneously impact both attitude and PBC for each behavior.

Trusting Beliefs

Trust has long been a central defining feature of economic and social interactions where uncertainty, delegation of authority, and fears of opportunism are present (Luhmann 1979). Trust is the belief that the trustee will act cooperatively to fulfill the trustor's expectations without exploiting its vulnerabilities. A detailed discussion on the nature and role of trust in e-commerce can be found in Gefen et al. (2003), McKnight and Chervany (2002), and Pavlou (2003).

In general, trust is viewed as a three-dimensional construct, composed of competence, integrity, and benevolence (Gefen et al. 2003). Competence is the belief in the trustee's ability to perform as expected by the trustor. Integrity is the belief that the trustee will be honest and keep its promises. Benevolence is the belief that the trustee will not act opportunistically, even given the chance. In sum, trust gives the trustor the confidence that the trustee will behave capably (ability), ethically (integrity), and fairly (benevolence).[6]

To be placed in a TPB-based model, trust must be defined with respect to a behavior through a well-specified target, action, context, and time frame (Ajzen 2002a). The target of trust is the Web vendor, the action is getting information or purchasing, and the context is the online environment. In terms of time frame, the impact of trust is observed for a specific window during which the consumers are making their decisions. This view is consistent with the trust literature where trust is considered with respect to a specific trustor (Mayer et al. 1995), context (Lewicki and Bunker 1995), and time window (Tan and Thoen 2001).

The practical utility of placing trust in the proposed TPB model stems from the fact that Web vendors have a considerable influence on trust through their reputation and size (Jarvenpaa et al. 2000), and institutional factors (Pavlou and Gefen 2004), among others.

Trusting Belief: Getting Information

Trust is important for getting information since consumers assess whether the information on a website is valid, credible, and accurate (Choudhury et al. 2001). Therefore, competence and integrity are the most relevant dimensions for getting information as they reflect the Web vendor's ability to provide credible information. A trusted Web vendor eases fears that purposely false information may expose a consumer to adverse outcomes (Gefen 2002). In sum, trust for getting information describes a consumer's belief that the Web vendor will provide valid, accurate, and timely information.

Trusting Belief: Product Purchasing

Trust is important for product purchasing since online consumers are vulnerable in several ways (e.g., not receiving the right product, becoming victims of fraud). A trusted Web vendor must have competence, integrity, and benevolence. Competence refers to "the expectation of technically competent role performance" (Barber 1983, p. 14). Integrity provides assurance that the vendor will keep promises. Benevolence ensures that the vendor will act fairly and stand behind its product, even if new conditions arise. In sum, for product purchasing, trust describes the belief that the vendor will properly deliver, fulfill, and stand behind its product.

Trusting Beliefs and Attitude

Trust is proposed as an attitudinal belief for both getting information and purchasing. The relationship between trust and attitude draws from the notion of *perceived consequences* (Triandis 1979). Trust enables favorable expectations that no harmful outcomes will occur if a trustor undertakes a behavior (Barber 1983). Trust also refers to optimistic expectations that the trustee will protect the trustor's interests (Hosmer 1995). In sum, trust creates favorable perceptions about the outcomes of the vendor's actions, thus creating positive attitudes. In terms of getting information, trust creates positive expectations that the vendor will post credible information. For product purchasing, trust engenders confident expectations that the Web vendor will fulfill its promises. Using a similar logic, Jarvenpaa et al. (2000), McKnight and Chervany (2002), and Pavlou (2003) show that trust has an impact on intentions by creating positive attitudes. Therefore,

H4a: Trusting beliefs in a Web vendor regarding getting information positively influence attitude toward getting product information from that Web vendor.

H4b: Trusting beliefs in a Web vendor regarding product purchasing positively influence attitude toward product purchasing from the Web vendor.

Trusting Beliefs and Perceived Behavioral Control

Trust is also placed in the nomological structure of the TPB as a control belief. The trust literature assumes that the trustor lacks control over the trustee's behavior, but trust builds the trustor's confidence to depend on the trustee (Fukuyama 1995). The relationship between trust and PBC draws from Luhmann's (1979) notion that trust reduces social uncertainty, which refers to all

[6]Trust has also been viewed as a four-dimensional construct, comprising of ability, integrity, benevolence, and predictability (McKnight and Chervany 2002). However, the literature on buyer-seller relationships has focused on credibility (competence and integrity) and benevolence (Ba and Pavlou 2002; Doney and Cannon 1997). Therefore, predictability or consistency is omitted.

unforeseen contingencies. In doing so, trust decreases efforts to copiously account for all potential contingencies (Gefen 2002). Following this logic, Zand (1972) concludes that by reducing social uncertainty, trust results in a greater controllability over the behavior. Therefore, trust facilitates trusting behaviors, not by controlling the Web vendor's actions (such as in agency theory), but by overcoming psychological barriers to engaging in a behavior. Trust thus acts as an uncertainty absorption resource that enables the trustor to better cope with social uncertainty. In terms of getting information, trust rules out negative contingencies due to the information that the vendor provides on its website. In terms of product purchasing, trust reduces the uncertainty of product delivery and fulfillment**.** We therefore propose the following hypotheses:

H5a: Trusting beliefs in a Web vendor regarding getting information positively influence controllability over getting product information from that Web vendor.

H5b: Trusting beliefs in a Web vendor regarding product purchasing positively influence controllability over product purchasing from that Web vendor.

TAM Beliefs

Following the TRA, TAM asserts that the intention to use a system is determined by two generalized beliefs: perceived usefulness (PU) and perceived ease of use (PEOU) (Davis 1989). The two TAM variables have been used to predict Internet purchasing behavior (e.g., Gefen et al. 2003; Koufaris 2002; Pavlou 2003).

Perceived Usefulness

PU is the extent to which one believes that using a system will enhance her performance (Davis 1989). PU of getting information is defined as the extent to which a consumer believes that a website would enhance her effectiveness in getting product information. Perceived purchasing usefulness is defined as the extent to which a consumer believes that a specific vendor would enhance her effectiveness in purchasing products. PU has been shown to influence behavioral intention through attitude (Davis1989; Taylor and Todd 1995b). Therefore, the following hypotheses are proposed:

H6a: Perceived usefulness of getting information positively influences attitude toward getting product information from a Web vendor.

H6b: Perceived usefulness of product purchasing positively influences attitude toward product purchasing from a Web vendor.

Perceived Ease of Use

PEOU is the extent to which a person believes that using the system will be effortless (Davis 1989). Applied to online consumer behavior, perceived ease of getting information is defined as the extent to which a consumer believes that getting product information from a website would be free of effort. Similarly, perceived ease of purchasing is defined as the extent to which a consumer believes that purchasing products from a Web vendor would be free of effort. Similar to PU, the role of PEOU on intentions is mediated by attitude (Davis 1989; Taylor and Todd 1995b). Hence, we propose the following hypotheses:

H7a: Perceived ease of getting information positively influences attitude toward getting product information from a Web vendor.

H7b: Perceived ease of product purchasing positively influences attitude toward product purchasing from a Web vendor.

In addition to the attitudinal role of PEOU, the instrumental aspect of PEOU (Davis 1989) is viewed as a control belief that facilitates a behavior with lower personal effort (Lepper 1985). For example, Davis argued that SE is one of the means by which PEOU influences behavior**.** Applied to e-commerce, a website from which it is - perceived as being easy to get information and make a purchase is likely to increase the consumer's ability and confidence in getting information and purchasing, respectively.

Similarly, an easy to use website removes the cognitive impediments of using the website, making getting information and purchasing more accessible to the consumer. It causes the perception of these online behaviors as being under the consumer's full control, thus making getting product information and purchasing completely up to consumer. Thus, the following hypotheses are offered:

H8a: Perceived ease of getting information positively influences (1) self-efficacy and (2) controllability over getting product information from that Web vendor.

H8b: Perceived ease of product purchasing positively influence (1) self-efficacy and (2) controllability over product purchasing from that Web vendor.

Consumer Resources

Time Resources

Leisure time has been considered a critical resource for getting information (Bellman et al. 1999). Having the time needed to browse for product information is a prerequisite for getting information since time is a key resource for time-consuming tasks.

We thus hypothesize that time resource is a facilitating condition that increases the controllability over a behavior.

H9a: Time resources positively influence controllability over getting product information from a Web vendor.

Monetary Resources

Purchasing a product necessitates an outlay of monetary resources. Having the required monetary resources is a prerequisite for purchasing a product. By overcoming the financial impediments to purchasing, consumers increase their controllability over purchasing.

H9b: Monetary resources positively influence controllability over product purchasing from a Web vendor.

Technological Characteristics

Download Delay

Download delay is defined as the amount of time it takes for a website to display a requested page from a Web server (Rose et al. 1999). Download delay relates to a website's response time, a factor associated with lower intentions to use a system (Ives et al. 1983). Download delay is also negatively related to the time needed to perform a task, which has been shown to negatively impact intentions to use a system (Mawhinney and Lederer 1990). Download delay is thus expected to negatively impact attitude toward getting information since having to wait too long for information creates negative expectations about the behavior.

Rose et al. (1999) identified download delay as a key e-commerce barrier. Since download delay acts as an impediment to receiving information quickly, it reduces the availability of time resources for consumers, thus making it more difficult for them to get product information. The preceding arguments suggest

H10a: Download delay negatively influences attitude toward getting product information from a Web vendor.

H10b: Download delay negatively influences controllability over product purchasing from a Web vendor.

Website Navigability

Navigability is defined as the natural sequencing of web pages, well-organized layout, and consistency of navigation protocols (Palmer 2002). A useful navigational structure facilitates traffic and sales on a Web site by increasing information availability (Lohse and Spiller 1998). Navigability enables consumers to find the right set of products and compare among alternatives. By making information easily accessible to consumers, navigability makes getting information be completely under the consumer's control. We thus propose

H11: Website navigability positively influences controllability over getting product information from a Web vendor.

Information Protection

Concerns about information security and privacy have made consumers skeptical about online transactions (George 2002), and they have been termed as key e-commerce obstacles (Hoffman et al. 1999; Rose et al. 1999). Information security refers to the consumers' belief about the Web vendor's ability to fulfill security requirements (e.g., authentication, encryption, and non-repudiation) (Cheung and Lee 2001). Information privacy refers to the consumers' belief about the Web vendor's ability to protect their personal information from unauthorized use or disclosure (Cassell and Bickmore 2000). Information protection is defined as the consumer's belief about the Web vendor's ability to safeguard her personal information from security and privacy breaches.[7] When consumers feel comfortable with the way a Web vendor will protect their personal information, they overcome any psychological barriers to purchasing from that vendor. Thus,

H12: Information protection positively influences controllability over product purchasing from a Web vendor.

Product Characteristics

Product Diagnosticity

Product diagnosticity is the extent to which a consumer believes that a website is helpful in terms of fully evaluating a product (Kempf and Smith 1998). Product diagnosticity is driven by *virtual* and *functional* control (Jiang and Benbasat 2004). Virtual control refers to allowing a consumer to manipulate a product image to see it from multiple angles and distances. Functional control allows a consumer to try different product functions. Since online consumers must rely on limited product representations (as opposed to traditional commerce), by providing a real feel for the product and enabling adequate product evaluation, product diagnosticity overcomes the barrier created by the lack of physical inspection of products and

[7]While information security and privacy can be viewed as distinct constructs, we propose a unitary view of information protection. The unidimensionality of information protection was validated during the pilot studies.

causes product purchasing to be under the consumer's full control.[8] Accordingly, we propose

H13: Perceived diagnosticity positively influences controllability over product purchasing from a Web vendor.

Product Value

Product value refers to a product that offers an attractive combination of quality and price. Price discounts are examples where the consumer can save money by getting a product at a lower price, and they have been shown to influence purchase intentions (Alford and Biswas 2002). Product value favorably predisposes consumers by allowing them to expect a high quality product at a low cost. This suggests

H14: Product value positively influences attitude toward product purchasing from a Web vendor.

Consumer Skills

An important prerequisite of engaging in a behavior is to have the necessary personal skills and knowledge to undertake the behavior (Koufaris 2002). Following Bandura (1986), SE is not equivalent to personal skills; SE deals with *subjective judgments* as to whether one has the personal skills needed to accomplish a behavior (p. 391). In contrast, "consumer skills" specifically describes the knowledge and expertise a consumer has to undertake a behavior, and it is thus a potential predictor of whether a certain behavior can be accomplished.

Applied to e-commerce, getting information skills captures a consumer's knowledgeability in getting product information from a vendor's website and making product evaluations. Having such skills is likely to increase consumers' judgments of how well they can get information from a vendor's website, thus increasing their SE for getting information. Similarly, purchasing skills refer to the consumer's knowledgeability about purchasing products online and making sound purchasing decisions, which are likely to increase consumers' judgments of their efficacy to purchase products online, leading to higher SE. We thus propose the following:

H15a: Getting information skills positively influence self-efficacy over getting information from a Web vendor.

H15b: Purchasing skills positively influence self-efficacy over product purchasing from a Web vendor.

Control Variables

The following variables are controlled for in this study:

- **Past Experience:** Studies have shown that past behavior influences future behavior (Conner and Armitage 1988), and online experience is a key factor in online behavior (Hoffman et al. 1999). Hence, this study controls for the role of past experience on both intentions and behaviors.
- **Habit:** Habit represents a variable that measures the frequency of repeated performance of behavior, and it has been shown to influence behavioral intentions (Limayem and Hirt 2003). In e-commerce, Liang and Huang (1998) found that consumers' prior experience had a moderating effect in predicting their acceptance of Internet shopping (including the two behaviors we consider). Therefore, the role of habit (both for getting information and purchasing) is controlled for its impact on getting information and purchasing, respectively.
- **Web Vendor Reputation:** The reputation of a Web vendor has been shown to be an antecedent of transaction behavior (Jarvenpaa et al. 2000), and it is thus controlled for in this study.
- **Product Price:** Since both focal behaviors are based on a specific product, product selection may differ across users and lead to different degrees of uncertainty due to price (Ba and Pavlou 2002). To account for product characteristics, we control for product monetary price.
- **Demographics:** Finally, we also control for age, gender, income, education, and Internet experience.

Research Methodology

Measurement Development

Following the TPB framework, each behavior must be defined within a well-specified target, action, context, and time frame (TACT) (Ajzen 2002a). Throughout the study, the target is the Web vendor, the action is either getting information or purchasing a specific product, the context is the online environment, and the time frame is a specific window of time, set at 30 days after the behavioral intentions were assessed.

All measurement items (Appendix A) were drawn from the literature, and they were then adapted using standard psychometric scale development procedures (Boudreau et al. 2001) and a refinement

[8]Product diagnosticity is not hypothesized to influence getting information since consumers can still get information about a product, but they may not purchase it online until they have fully evaluated the product in a traditional setting.

procedure based on the pilot studies. All scales followed Ajzen's (2002a) recommendations for designing a TPB survey.

A single indicator (criterion variable) was used to assess PBC (Taylor and Todd 1995b). The SE measures are based on Compeau and Higgins (1995). The controllability measures are based on Taylor and Todd (1995b). Attitude and SN were adapted from Karahanna et al. (1999).

In accordance with Ajzen and Fishbein's (1980) expectancy– value formulation, belief-based measures are obtained by multiplying belief strength and power (equations 1 through 3). Attitudinal beliefs are measured as the product of behavioral belief strength (b) and outcome evaluation (e). Control beliefs are measured as the product of control belief strength (c) and control belief power (p).

Trust was based on McKnight and Chervany (2002). Trust (getting information) captures the vendor's honesty and competence in terms of posting credible information. Trust (purchasing) captures the Web vendor's competence, integrity, and benevolence in fulfilling product orders. PU and PEOU were adapted from Gefen et al. (2003). Time and monetary resources were based on Bellman et al. (1999), download delay on Rose et al. (1999), and website navigability on Palmer (2002). Information protection was based on the scales of perceived privacy and security developed by Cheung and Lee (2001) and Salisbury et al. (2001). Product value was based on Chen and Dubinsky (2003), product diagnosticity on Jiang and Benbasat (2004), and consumer skills on Koufaris (2002). Habit was adapted from Limayem and Hirt (2003), and Web vendor reputation from Jarvenpaa et al. (2000). Past behavior used standard items for past activities. Product price was ex post captured as a binary (high/low) variable.

Survey Administration

Following the development of the constructs and their operationalization, several small-scale pretests (including personal interviews) were conducted with a total of 75 respondents to enhance the psychometric properties of the measurement scales. Given the large number of constructs in the proposed model, the goal was to have a small number of items per construct while retaining adequate measurement properties. Finally, a larger-scale pretest with 214 students was also contacted to confirm the measurement properties of the final items and provide preliminary evidence for the proposed model. All pilot tests were conducted following the same procedure as the subsequent actual data collection (Churchill 1979).

This study's main sample comprised 312 Internet consumers drawn from two populations. The first sample was selected from students, and the second sample consisted of Internet consumers. All respondents were asked to click on the Web URL link provided in an invitation e-mail message, which linked to an online survey instrument. The respondents were offered incentives in the form of a $250 draw and a report that summarized the study results. The invitees were assured that the results would be reported in aggregate to assure their anonymity.

Similar to the pilot studies, the respondents were asked to choose a specific product about which they were seriously considering getting information and purchasing online within the next 30 days. Having selected a product, they were then asked to select and report a specific Web vendor that they had recently visited that offers this product. They were then asked to respond to the survey questions based on their selection. Thirty days after completing the first survey, the respondents were contacted again. Following Blair and Burton (1987), they were asked to indicate if they had acted on "getting information" and "purchasing" their selected product from the Web vendor of their choice.

Results

We used partial least square (PLS) to analyze our data. PLS employs a component-based approach for estimation purposes (e.g., Lohmoller 1989) and can handle formative factors, unlike LISREL. PLS places minimal restrictions on measurement scales, sample size, and residual distributions (Chin et al. 2003). PLS was thus chosen to accommodate the presence of formative factors and the large number of constructs.

Based on Chow's (1960) test statistic[9] and Wilk's lambda,[10] the results from the student and consumer samples were not significantly different. To double check, we performed a separate data analysis on each sample and got virtually identical results. Therefore, the results reported here are based on the statistical analysis of the combined data from both samples. Demographic information is shown in Table 4.

The total number of completed responses was 312. Out of the 1,000 consumers we contacted, 84 e-mails were undeliverable, and 134 responses were obtained (15 percent response rate). The response rate is comparable to recent online consumer surveys (e.g., Koufaris 2002; Pavlou 2003). Out of the 290 students, 179 responses were obtained (62 percent response rate). The follow-up study was completed by 267 (86 percent) of the original respondents (77 percent of consumers and 91 percent of students).

Nonresponse bias was assessed by verifying that (1) respondents' demographics were similar to those of other Internet consumers (http://www. infoplease.com/ipa/A0901651.html), and (2) early and

[9]The Chow test compares the sum of squared errors from three regressions—one for each sample period and one for the pooled data. The F value is .27 ($p > .99$).

[10]The Wilk's lambda criterion measures the difference between groups, and it was .99, implying virtually no difference.

Table 4. Demographic Characteristics

Variables	Gender (% Male)	Age (Years)	Education (Years)	Income ($1,000s)	Internet Experience (Years)
Mean/Median (STD)	50/50 (50)	31.6/30 (15)	20.9/21 (4.2)	31.6/29 (62.5)	4.4/4.7 (2.1)

Table 5. Descriptive Statistics for Principal TPB Perceptions

	Getting Information			Purchasing		
Principal Construct	Mean (STD) [Scale 1-7]	Coefficient of Variation (%)	Internal Consistency	Mean (STD) [Scale 1-7]	Coefficient of Variation (%)	Internal Consistency
Actual Behavior	.65 (.47)	72	1.0	.27 (.45)	166	1.0
Behavioral Intent	5.3 (1.7)	32	.84	4.2 (1.9)	45	.97
Attitude toward Behavior	5.8 (1.4)	24	.94	4.8 (1.6)	33	.92
Subjective Norm	4.6 (1.6)	34	.77	4.6 (1.6)	34	.83
PBC (Indicator)	5.9 (1.3)	22	1.0	5.3 (1.6)	30	1.0
Self-Efficacy	5.8 (1.3)	21	.92	5.7 (1.5)	26	.93
Controllability	5.7 (1.4)	24	.74	5.6 (1.5)	26	.86

Table 6. Descriptive Statistics for External Beliefs

Behavior	External Beliefs (belief strength × belief power)	Mean (STD) [Scale: 1–49 (7 × 7)]	Coefficient of Variation (%)	Internal Consistency
Getting Information	Trust – Getting Information	34.4 (10.4)	29	.88
	PU – Getting Information	35.7 (10.8)	30	.89
	PEOU – Getting Information	35.6 (10.6)	29	.83
	Time Resources	33.7 (12.7)	37	.90
	Download Delay	35.6 (11.1)	31	.89
	Website Navigability	35.9 (11.6)	32	.82
	Getting Information Skills	33.7 (12.6)	37	.84
Purchasing	Trust – Purchasing	35.9 (11.4)	31	.87
	PU – Purchasing	35.2 (11.8)	33	.88
	PEOU – Purchasing	36.1 (11.9)	32	.89
	Product Value	30.9 (14.1)	45	.85
	Monetary Resources	31.7 (14.2)	44	.88
	Product Diagnosticity	32.8 (11.8)	35	.83
	Information Protection	36.9 (12.3)	33	.90
	Purchasing Skills	34.9 (11.2)	32	.87

late respondents were not significantly different (Armstrong and Overton 1977). The first set of tests compared gender, age, education, income, and Internet experience. The second set of tests compared these characteristics, plus all principal constructs for the two groups. All possible t-test comparisons between the means of the two groups in both sets of tests showed insignificant differences ($p < 0.1$ level).

Descriptive Statistics

Descriptive statistics for the principal constructs are shown in Tables 5 and 6. Since the respondents self-selected the focal product and the Web vendor, social desirability bias could be present. However, the coefficients of variation (STD/Mean ratio) attest to substantial variability.

Test for Higher-Order Factors

In PLS, higher-order factors can be approximated using two common procedures (Chin et al. 2003). The first uses repeated indicators following Lohmoller's (1989) hierarchical component model by directly measuring the higher-order constructs using all items of its lower-order constructs (pp. 130-133). The second models the paths from the lower order to the higher order construct (Edwards 2001). The latter approach was chosen for this study because it specifies the relative weight of SE and controllability on PBC. These weights were derived using a principal components factor analysis (Diamantopoulos and Winklhofer 2001, p. 270):

$$PBC = \gamma_1 \times SE + \gamma_2 \times Controllability \quad (4)$$

Where: γ_1 and γ_2 are the parameters of the impact of SE and controllability on the latent variable PBC.

The existence of a higher-order model was tested with a set of tests following Chin (1998a) and Diamantopoulos and Winklhofer (2001). First, we examined the correlations between the lower- and higher-order factors. For getting information (Table 7), the correlations between SE and controllability and the aggregate PBC factor are .72 and .63 ($p < .01$), respectively. For purchasing (Table 8), the correlations are .74 and .66 ($p < .01$) for SE and controllability, respectively. Second, to insure content validity, indicator or *criterion* items were used to assess whether the aggregate latent factor is highly correlated with a direct PBC indicator. The correlation between the *aggregate* four-item PBC factor and the single PBC *indicator* item is .74 ($p < .01$) for getting information, and .76 ($p < .01$) for purchasing. This suggests that the aggregate factor captures the content of PBC for each behavior. Finally, we tested whether the aggregate PBC factor fully mediates the impact of the underlying formative factors on intentions and behavior, and external beliefs influence PBC only through SE and controllability. All mediation tests (Baron and Kenny 1986) for both behaviors (omitted for brevity) confirmed that (1) the higher-order PBC factor fully mediates the impact of SE and controllability on intention and behavior, and (2) SE and controllability fully mediate the impact of all external beliefs on PBC.

Measurement Validation

Measure reliability was assessed using internal consistency scores, calculated by the composite reliability scores (Werts et al. 1974).[11] Internal consistencies of all variables are considered acceptable since they exceed .70, signifying tolerable reliability. Convergent and discriminant validity is inferred when the PLS indicators (1) load much higher on their hypothesized factor than on other factors (own-loadings are higher than cross-loadings), and (2) when the square root of each construct's average variance extracted (AVE) is larger than its correlations with other constructs (Chin 1998a).

The first test was performed using the CFA procedure in PLS.[12] As shown in Appendix B, all items loaded well on their respective factors, which are much higher than all cross loadings. Second, as shown in Tables 7 and 8, the square root of all AVEs are above .80, which are much larger than all the cross-correlations. These tests suggest that all measures have adequate convergent and discriminant validity. Common method bias was assessed using Harman's one-factor test (Podsakoff and Organ 1986). Each principal construct explains roughly equal variance (omitted for brevity), indicating that our data do not suffer from high common method variance. Finally, multicollinearity among the external beliefs was not a serious concern since none of the checks (eigen analysis, tolerance values, VIF) indicated any problem.

The Structural Model

The PLS path coefficients are shown in Figure 4. For clearer exposition, the item loadings of each construct are omitted since they are all above .80. All control variables were initially included in the model, but since none were significant, they were dropped. With respect to the control variables of past experience and habit, this finding is consistent with Ajzen (1991), who argues that the main constructs of TPB should account for both because past experiences are captured via PBC.

Getting information has a significant impact on purchasing. There is also a significant impact of purchase intention on intention to get information. Together with attitude, PBC is a significant predictor of intention to get information ($R^2 = .55$). Also, intention and PBC

[11]The composite reliability score is $(\Sigma\lambda\iota)^2/[(\Sigma\lambda\iota)^2 + \Sigma\iota Var(\varepsilon_i)]$, where $\lambda\iota$ is the indicator loading, and $Var(\varepsilon_i)=1-\lambda\iota^2$.

[12]Confirmatory factor analysis in PLS was performed following the procedure of Agarwal and Karahanna (2000).

Table 7. Correlation Matrix and Average Variance Extracted for Principal Constructs (Getting Information)

	GET	INT	ATT	SN	PBC	SE	CONT	TRUST	PU	PEOU	TIME	DEL	NAVIG	SKIL
Getting Info	1.0													
Intention	.35*	.93												
Attitude	.31*	.66*	.97											
Subjective Norm	.07	.24*	.36*	.90										
PBC (Aggregate)	.27*	.25*	.34*	.20*	.86									
Self-Efficacy	.25*	.27*	.42*	.20*	.72*	.96								
Controllability	.24*	.24*	.26*	.19*	.63*	.69*	.89							
Trust - Getting Info	.22*	.35*	.44*	.24*	.41*	.39*	.45*	.91						
PU - Getting Info	.13*	.33*	.42*	.25*	.38*	.42*	.39*	.61*	.91					
PEOU - Getting Info	.19*	.36*	.44*	.26*	.43*	.47*	.40*	.62*	.71*	.90				
Time Resources	.15	.29*	.38*	.24*	.42*	.47*	.40*	.40*	.47*	.46*	.94			
Download Delay	.23*	.35*	.37*	.22*	.55*	.58*	.52*	.52*	.52*	.58*	.50*	.93		
Navigability	.17*	.37*	.42*	.17*	.47*	.48*	.44*	.57*	.53*	.61*	.50*	.71*	.90	
Consumer Skills	.12	.23*	.32*	.19*	.35*	.45*	.45*	.49*	.51*	.52*	.64*	.48*	.52*	.89

Note: * denotes significant correlations at the $p < .01$ level. The diagonal elements (in bold) represent the square root of the AVE.

Table 8. Correlation Matrix and Average Variance Extracted for Principal Constructs (Purchasing)

	PUR	INT	ATT	SN	PBC	SE	CONT	TRUST	PU	PEOU	VAL	MON	DIAG	PROT	SKIL
Purchasing	1.0														
Intention	.28*	.98													
Attitude	.23*	.74*	.94												
Subjective Norm	.03	.38*	.45*	.89											
PBC (Aggregate)	.22*	.36*	.41*	.39*	.87										
Self-Efficacy	.21*	.34*	.37*	.36*	.74*	.96									
Controllability	.19*	.29*	.30*	.32*	.66*	.73*	.91								
Trust – Purchasing	.12	.23*	.33*	.36*	.43*	.40*	.42*	.85							
PU – Purchasing	.14	.34*	.37*	.29*	.45*	.39*	.42*	.67*	.91						
PEOU – Purchasing	.16*	.33*	.42*	.36*	.52*	.45*	.47*	.71*	.67*	.94					
Product Value	.08	.34*	.36*	.38*	.32*	.33*	.32*	.39*	.35*	.43*	.85				
Monetary Res.	.18*	.52*	.44*	.41*	.42*	.47*	.43*	.42*	.45*	.43*	.37*	.93			
Diagnosticity	.21*	.28*	.35*	.13	.35*	.41*	.40*	.50*	.55*	.44*	.29*	.40*	.90		
Info Protection	.18*	.17*	.28*	.25*	.31*	.35*	.40*	.54*	.40*	.50*	.24*	.30*	.41*	.93	
Consumer Skills	.10	.22*	.34*	.25*	.38*	.43*	.41*	.58*	.61*	.58*	.34*	.50*	.64*	.47*	.92

Note: * denotes significant correlations at the $p < .01$ level. The diagonal elements (in bold) represent the square root of the AVE.

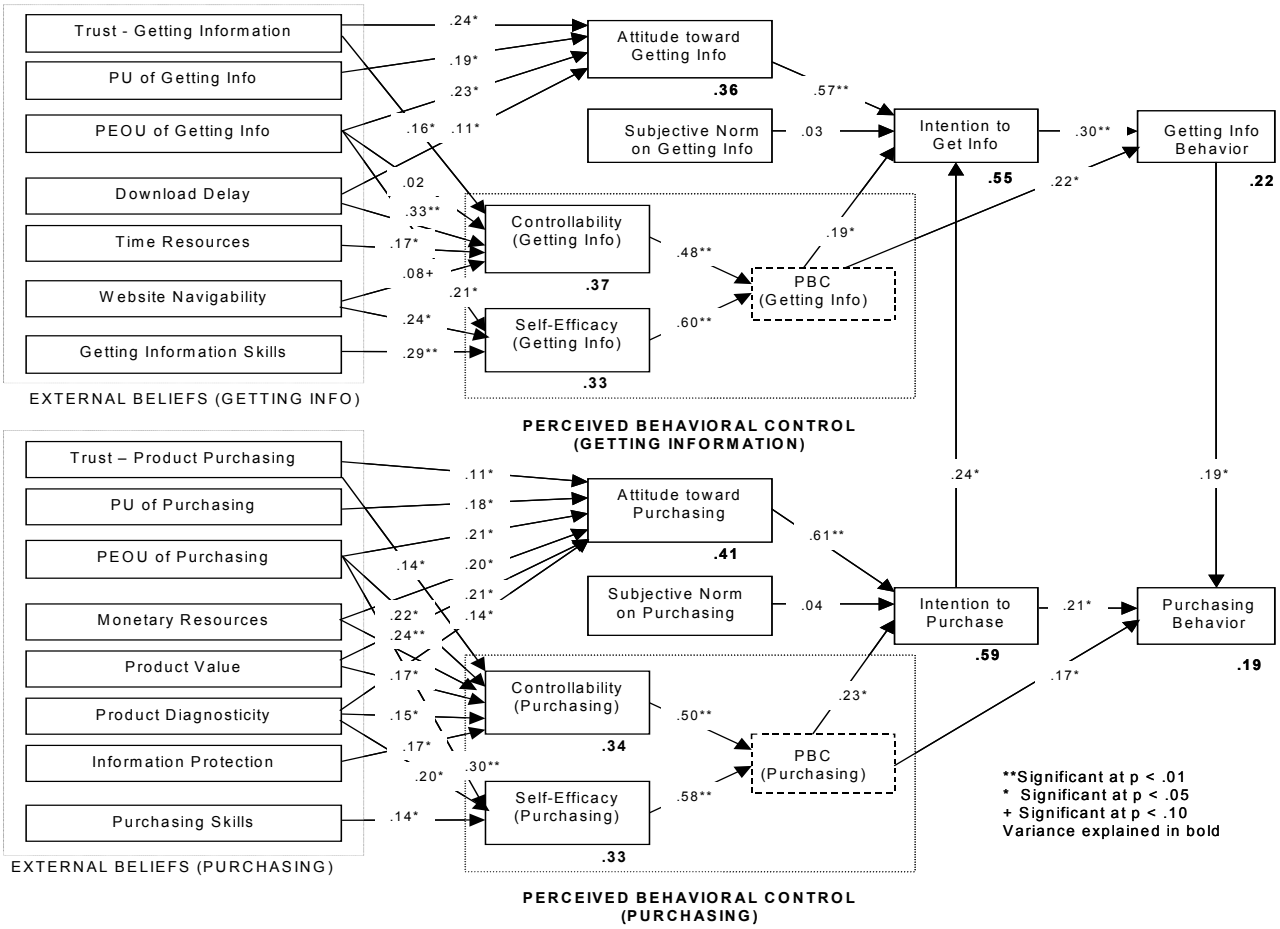

Figure 4. PLS Results for Getting Information and Purchasing

influence getting information (R^2 = .22). The antecedents of attitude (R^2 = .36) toward getting information are trust, PU, PEOU, and download delay. With the exception of PEOU and website navigability (b = .08, p < .10), all hypothesized control beliefs are significant, explaining R^2 = .37 of controllability over getting information. Finally, PEOU, skills, and website navigability are significant predictors of SE (R^2 = .33).

Product purchasing (R^2 = .19) is predicted by purchase intentions and PBC. Attitude and PBC explained R^2 = .59 of the variance of purchasing intentions. Attitude toward purchasing (R^2 = .41) is predicted by trust, PU, PEOU, monetary resources, product value, and product diagnosticity. Controllability over purchasing (R^2 = .34) is impacted by trust, PEOU, monetary resources, product value and diagnosticity, and information protection. Finally, PEOU, product diagnosticity, and purchasing skills significantly influence purchasing SE (R^2 = .33).

To examine the predictive power of the proposed model, we compare it to four models in terms of R^2 *adjusted* (1) a TRA model (PBC omitted), (2) a TAM model (only PU and PEOU), (3) a TAM-trust integrated model, and (4) a direct model (attitude, SN, and PBC omitted as mediators), using Cohen's (1988) formula for calculating effect size (f^2) (the degree to which the phenomenon is present in the population) (Chin 1998b):

$$f^2 = (R^2_{included} - R^2_{excluded}) / (1 - R^2_{included}) \quad (5)$$

1. Dropping PBC significantly reduces the variance explained in getting information to R^2 = .12 (f^2 = .13) and in purchasing to

R^2 = .11 (f^2 = .10), and also substantially decreases the variance explained in intentions to get information to R^2 = .42 (f^2 = .29) and purchase to R^2 = .46 (f^2 = .32).

2. A TAM model predicts R^2 = .23 of the variance in intentions to get information (f^2 = .71), and R^2 = .29 (f^2 = .73) in intentions to purchase.

3. An integrated TAM-trust model (Gefen et al. 2003) explains R^2 = .28 (f^2 = .69) of the variance in intentions to get information, and R^2 = .35 (f^2 = .59) in purchasing intentions.

4. A direct model explains R^2 = .41 (f^2 = .40) of the variance in intentions to get information, and R^2 = .46 (f^2 = .32) in purchase intentions. Finally, a test of mediation (Baron and Kenny 1986) validates that attitude and PBC fully mediate the impact of external beliefs on intentions for both behaviors (omitted for brevity).

In sum, the four competing models have significantly lower predictive validity compared to the original model, as shown by the substantial effect sizes (Cohen 1988).[13] Most important, the original model explicates most accessible factors that underlie online consumer behavior, establishing its superiority over simpler models.

Discussion

This paper aims to shed light on the phenomenon of consumer adoption of B2C e-commerce using an extended version of TPB. The study draws upon theories from information systems, social psychology, marketing, and economics to propose, operationalize, and empirically examine a comprehensive, yet parsimonious model that explains and predicts two key online consumer behaviors: getting information and purchasing products.

Key Findings and Insights

This study does not view e-commerce adoption as a monolithic behavior (product purchasing), but rather as consisting of at least one contingent behavior (getting information). These behaviors are related: getting information influences purchasing, while intention to purchase triggers intention to get information.

The well-established TPB was extended to predict these two behaviors and to derive the set of their respective accessible beliefs. The derivation is consistent with Ajzen and Fishbein (1980), who recommend selecting five to nine beliefs that are most likely to influence each behavior. Given that the literature has offered numerous variables to predict e-commerce adoption, this study identified the most accessible ones by freely eliciting (not arbitrarily selecting) consumer responses through open-ended questions. The resulting beliefs are presumably foremost in consumers' minds. Most of these beliefs recur in the IT adoption and use literature (e.g., PU, PEOU, navigability), or within the domain of IS (e.g., trust, information protection, product diagnosticity, user skills), highlighting the fundamental role of IT in online consumer behavior, beyond existing variables (e.g., reputation, product value). It is shown that these beliefs can adequately predict the two proposed e-commerce behaviors and, as a consequence and to a large extent, e-commerce adoption.

Implications for Theory and Research

The results have implications for the e-commerce, IS, TPB, and trust literatures.

Implications for Electronic Commerce Research

Most e-commerce studies follow the TRA or TAM, implicitly assuming that behavior is volitional. However, online consumers face several new constraints, such as the impersonal nature of the online environment, the extensive use of IT, and the uncertainty of the open Internet infrastructure. These issues call for the inclusion of PBC in e-commerce adoption models (and the use of TPB rather than TRA or TAM). Indeed, neglecting PBC and relying on simpler models may lead to e-commerce adoption models that are incomplete and potentially misleading.

Viewing B2C e- commerce adoption as a two-stage process not only yields a more complete understanding of online consumer behavior, but it also enhances the predictive power of the e-commerce adoption model, since the two behaviors are interrelated. In doing so, this study provides a comprehensive, yet parsimonious model to describe and predict online consumer behavior and e-commerce adoption.

Implications for Information Systems

The set of accessible beliefs identified in our study was empirically shown to draw from the IT adoption and use literature (e.g., PU, PEOU, download delay, navigability) or come from within the domain of IS (e.g., trust, information protection, product diagnosticity, user skills), confirming the increasingly important role of IT in online consumer behavior. It is important to reiterate that these beliefs were not arbitrarily chosen, but they were freely elicited. These findings have implications for the emerging role of IS as a reference discipline for online consumer behavior. While traditional consumer behavior is well described by marketing and

[13]For comparing correlation-based coefficients (such as the R^2 adjusted), effect sizes of 0.1 are considered small, 0.3 are considered medium, and 0.5 are considered large. However, no specific significance test has been proposed.

economic theories, overwhelming evidence suggests that IT-related variables have become at least as important as traditional factors in predicting consumer behavior on the Internet (e.g., Gefen *et al.* 2003; Jarvenpaa et al. 2000; McKnight and Chervany 2002; Pavlou 2003). Existing literature on consumer behavior has largely ignored IT issues, and justifiably so, since consumers did not face any IT issues in physical markets. However, online consumers are intrinsically active users of IT, and IT considerations take center stage (Stewart and Pavlou 2002). Rather than viewing e-commerce as a marketing issue influenced by IT use, it is perhaps more accurate to view e-commerce as an IS phenomenon where an IT user interacts with a complex IT system (Koufaris 2002). This system includes not only a website, but also the supporting services and the people and procedures behind those services (Taylor and Todd 1995b). An IS view would not only help better understand B2C e-commerce, but it may also shed light on how marketing, economic, and other factors integrate with IS concepts to better explain other complex IT phenomena.

Implications for the Theory of Planned Behavior

In striving to fully understand and simultaneously predict two distinct, contingent, and non-volitional behaviors, this paper contributes to the social psychology literature by extending TPB in three key ways.

First, this study sheds light on the nature and role of PBC, which is still not well understood. We theorize and empirically show that PBC acts as a second-order formative structure, formed by two distinct dimensions: SE and controllability. This structure maintains the parsimonious unitary view of PBC, while allowing the role of its two underlying dimensions to vary depending on the relative importance of SE and controllability for different behaviors. The proposed second-order formative structure of PBC should be applicable to virtually any behavior, even if the impact of SE or controllability could vary across behaviors. Finally, a formative structure permits a more detailed prediction of external control beliefs by allowing a distinct prediction of SE and controllability, thus leading to better prediction of PBC, intention, and behavior.

Second, while TPB is commonly used to model behaviors independently, this study extends TPB to allow modeling the association between two related behaviors. The behaviors are linked at the intention and behavior stages, while perceptions and beliefs remain strictly behavior-specific (consistent with TPB). One behavior can thus influence another without violating TPB. In addition, by employing Gollwitzer's (1999) notion of *implementation intentions*, a certain goal-directed intention can trigger another intention if this serves as a means to accomplishing the goal. Allowing two related behaviors to be simultaneously modeled opens new avenues for future research. It also paves the way for a more complete explanation and prediction of behaviors beyond TPB's original constructs.

Finally, this study provides empirical evidence on whether past behaviors should be included in the TPB model as control variables. By accounting for both deliberate (prior experience) and automated (habit) past behaviors as control variables, we find empirical evidence for the adequacy of TPB perceptions to reflect past activities, validating Ajzen's (1991) theoretical assertion, at least for the two e-commerce behaviors.

Implications for the Trust Literature

Perhaps the most theoretically interesting and empirically influential belief associated with getting information and purchasing products is trust. By integrating trust as an external belief in the TPB model, we make two key contributions to the trust literature.

An important contribution is the placement of trust in the nomological network of TPB. Although trust has already been hypothesized and shown to influence online transaction behavior, previous views were incomplete. They either considered trust as directly affecting intentions (e.g., McKnight and Chervany 2002), or as influencing intentions through attitude (e.g., Jarvenpaa et al. 2000). Our view delineates the process by which trust influences behavior by acting as both an attitudinal and control belief, and thus places trust as an antecedent of both attitude (due to confident expectations) and controllability (due to uncertainty reduction).

A second important contribution lies in the proposed conceptualization of trusting beliefs that is consistent with the behavior-specific nature of TPB. Compared with most trust studies, trust is conceptualized at a more granular level, namely, as distinct beliefs about getting information and purchasing. Given the increasing importance of trust in e-commerce, such a thorough approach to the nature and role of trust becomes necessary for predicting specific consumer behaviors.

Implications for Practice and Public Policy

The proposed e-commerce adoption model describes a concrete set of factors that managers might manipulate to facilitate consumer browsing and purchasing. It also suggests that managers should examine interventions to improve consumer attitudes and enhance PBC over online activities. The external beliefs (and their relative impact on attitude and PBC) represent specific factors on which managers should focus their attention, efforts, and investments to shape online consumer behavior and increase transaction volume.

The proliferation of B2C e-commerce has been a priority for many governments. Public policy officials could support e-commerce by instituting mechanisms for influencing the proposed consumer beliefs. For example, trust can be engendered through institution-based mechanisms and prosecution of online fraud (Pavlou and

Gefen 2004). Laws against unsolicited (spam) e-mail and establishment of security guidelines can increase perceived information protection. Education and training could influence consumer online skills.

Limitations and Suggestions for Future Research

Despite the comprehensiveness of the proposed model and the empirical support for it, we acknowledge some theoretical and empirical limitations, which call for additional research.

First, e-commerce adoption cannot be fully assessed with only two behaviors. Future research could examine additional consumer behaviors, such as giving information and post-purchase interaction. Our TPB-based framework provides a blueprint for identifying the key accessible beliefs for such behaviors.

A major obstacle in our study was the large number of survey items (over 100) we had to pose to our respondents in order to simultaneously assess two behaviors in a comprehensive fashion using the product of belief strength and belief power for each external belief. We were thus limited to the use of mostly two-item scales. To overcome this limitation, we used multiple pretests to judiciously reduce the number of items per scale without weakening the underlying construct's measurement properties. Furthermore, we took care to base our measures on well-validated scales with excellent psychometric properties. The sample size of 312 participants was large enough to capture the largest number of structural paths directed at any construct (Chin et al. 2003). Future research might succeed in reducing the number of survey items (especially when considering two or more related behaviors) by questioning the validity or necessity of TPB's expectancy-value formula where both belief strength and belief power must be measured.

Another limitation is the possible presence of social desirability bias or "ceiling effects" due to the self-selection of products and Web vendors. While this may result in relatively high means for the variables, there was enough (relative) variability in our measures (Tables 4 and 5) to make testing possible. Theoretically, consumers tend to get information and purchase products from Web vendors toward whom they have positive convictions. Therefore, the findings of this study may generalize to most e-commerce transactions. Nevertheless, further research is required to test this assertion.

Self-selection of products and vendors also introduces complications because the focal behaviors may vary in their level of inherent uncertainty. Even if product price and Web vendor reputation are controlled for, risk variability can moderate some relationships, such as the impact of trust on PBC. Such moderated relations require a distinct conceptualization on their own right, which were beyond the scope of the study.

In our survey design, the respondents were asked to self-select a product they were *seriously considering purchasing*. This might have downgraded the potential impact of PBC by encouraging the participants to self-select familiar products that they consider easily accessible. While this downward bias further stresses the prominent role of PBC in online consumer behavior, future research should experiment with different survey designs that could completely prevent self-selection bias.

In contrast to TAM, whose two beliefs (PU and PEOU) aim to predict "system use," the external beliefs in our extended TPB model are specific to each e-commerce behavior. Therefore, our PU and PEOU for getting information and purchasing are not identical to TAM's variables for system use. For example, productivity does not make much sense in e-commerce, and it was therefore dropped as a component of PU. Purchasing PU has higher emphasis on enhancing the consumer's effectiveness in purchasing products, while getting information PU focused on obtaining useful and valuable information. Also, even if previous research on TAM (e.g., Taylor and Todd 1995b) has shown that attitude does not fully mediate the impact of PU and PEOU on intentions to use IT, these empirical findings on the "IT usage" behavior should not necessarily generalize to the focal e-commerce behaviors.

Consistent with Ajzen's (2002a) recommendations and following suggestions from the pilot tests, our survey items were grouped under meaningful categories, and the "belief strength" and "belief power" items were presented in pairs. While such survey presentation may create higher construct reliabilities, our internal consistency results are similar to previous TPB studies, and are not exceedingly high (Straub et al. 2004). Nevertheless, to entirely account for such bias, future research could randomize all items.

Following TPB, all constructs in the proposed model reflect assessments for a specific product and Web vendor. Extrapolating beyond these parameters requires additional research since TPB cautions the generalization from one behavior to others. Finally, despite the longitudinal assessment of actual behavior, the remaining factors were measured at a single point in time, which prevents causal interpretation.

Conclusion

This study represents a systematic approach to understanding and predicting online consumer behavior using an extended version of TPB. The development of a large set of accessible e-commerce factors is in response to several IS researchers (e.g., Ives et al. 1983) who encouraged building a cumulative knowledge in emerging IS areas, such as online consumer behavior. In doing so, we aim to encourage IS researchers to view online consumer behavior as a new research area where IS can serve as a reference discipline.

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References

Agarwal, R., and Karahanna, E. "Time Flies When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage," *MIS Quarterly* (24:4), 2000, pp. 665-694.

Ajzen, I. "Constructing a TpB Questionnaire: Conceptual and Methodological Considerations," Working Paper, University of Massachusetts, Amherst, September 2002a (available online at http://www-unix.oit.umass.edu/~aizen/pdf/tpb.measurement.pdf).

Ajzen, I. "Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior," *Journal of Applied Social Psychology*, (32), 2002b, pp. 665-683.

Ajzen, I. "The Theory of Planned Behavior," *Organizational Behavior & Human Decision Processes* (50), 1991, pp. 179-211.

Ajzen, I., and Fishbein, M. *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall, Englewood Cliffs, NJ, 1980.

Alford, B., and Biswas, A. "The Effects of Discount Level, Price Consciousness and Sale Proneness on Consumers' Price Perception and Behavioral Intention," *Journal of Business Research* (55:9), 2002, pp. 775-783.

Armstrong, J. S., and Overton, T. "Estimating Nonresponse Bias in Mail Surveys," *Journal of Marketing Research* (19), 1977, pp. 396-402.

Ba, S., and Pavlou, P. A. "Evidence of the Effect of Trust in Electronic Markets: Price Premiums and Buyer Behavior," *MIS Quarterly* (23:4), 2002, pp. 243-268.

Bandura, A. *Social Foundations of Thought and Action: A Social Cognitive Theory*, Prentice-Hall, Englewood Cliffs, NJ, 1986.

Barber, B. *The Logic and Limits of Trust,* Rutgers University Press, New Brunswick, NJ, 1983.

Baron, R., and Kenny, D. "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," *Journal of Personality and Social Psychology* (51:6), 1986, pp. 1173-1182.

Bellman, S., Lohse, G. L., and Johnson, E. J. "Predictors of Online Buying Behavior," *Communications of the ACM* (42:12), 1999, pp. 32-38.

Blair, E., and Burton, S. "Cognitive Processes Used by Survey Respondents to Answer Behavioral Frequency Questions," *Journal of Consumer Research* (14), 1987, 141-154.

Boudreau, M.-C., Gefen, D., and Straub, D. "Validation in IS Research: A State-of-the-Art Assessment," *MIS Quarterly* (25:1), 2001, pp. 1-16.

Cassell, J., and Bickmore, T. "External Manifestations of Trustworthiness of the Interface," *Communications of the ACM* (43:12), 2000, pp. 50-59.

Chen, Z., and Dubinsky, A. J. "A Conceptual Model of Perceived Customer Value in E-commerce: A Preliminary Investigation," *Psychology and Marketing* (20:4), 2003, pp. 323-347.

Cheng, S. F., and Chan, K. S. "The Role of Perceived Behavioral Control in Predicting Human Behavior: A Meta-Analytic Review of Studies on the Theory of Planned Behavior, Working Paper, Chinese University of Hong Kong, 2000.

Cheung, C., and Lee, M. "Trust in Internet Shopping: Instrument Development and Validation through Classical and Modern Approaches," *Journal of Global Information Management* (9:3), 2001, pp. 23-35.

Chin, W. W. "Issues and Opinion on Structural Equation Modeling," *MIS Quarterly* (22:1), 1998a, pp. 7-16.

Chin, W. W. "The Partial Least Squares Approach to Structural Equation Modeling," in *Modern Methods for Business Research,* G. A. Marcoulides (ed.), Lawrence Erlbaum Associates, Mahwah, NJ, 1998b, pp. 295-336.

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, pp. 189-217.

Chow, G. "The Standard F Test for the Equality of Two Sets of Coefficients in Linear Regression Models," *Econometrica* (28), 1960, pp. 591-605.

Churchill, G. "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research* (16:1), 1979, pp. 64-73.

Choudhury, V., Karahanna, E., and Dumm, R. "The Relative Advantage of Electronic Channels: A Conceptual and Operational Definition," Working Paper, University of Cincinnati, 2001.

Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*, Lawrence Erlbaum Associates, Hillsdale, NJ, 1988.

Compeau, D., and Higgins, C. "Application of Social Cognitive Theory to Training for Computer Skills," *Information Systems Research* (6:2), 1995, pp. 118-143.

Conner, M., and Armitage, C. J. "Extending the Theory of Planned Behavior: A Review and Avenues for Future Research," *Journal of Applied Social Psychology* (28) 1998, pp. 1429-1464.

Davis, F. D. "Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology," *MIS Quarterly* (13:3), 1989, pp. 319-340.

Diamantopoulos, A., and Winklhofer, H. M. "Index Construction with Formative Indicators: An Alternative to Scale Development," *Journal of Marketing Research* (38:2), 2001, pp. 269-277.

Doney, P. M., and Cannon, J. P. "An Examination of the Nature of Trust in Buyer-Seller Relationships," *Journal of Marketing* (61), April 1997, pp. 35-51.

Edwards, J. R. "Multidimensional Constructs in Organizational Behavior Research: An Integrative Analytical Framework," *Organizational Research Methods* (4:2), 2001, pp. 144-192.

Engel, J., Kollat, D., and Blackwell, R. *Consumer Behavior*, Holt, Rinehart, and Winston, New York, 1973.

Fukuyama, F. *Trust: The Social Virtues and the Creation of Prosperity*, The Free Press, New York, 1995.

Gefen, D. "Reflections on the Dimensions of Trust and Trustworthiness among Online Consumers," *DataBase* (33:3), 2002, pp. 38-53.

Gefen, D., Karahanna, E., and Straub, D. W. "Trust and TAM in Online Shopping: An Integrated Model," *MIS Quarterly* (27:1), 2003, pp. 51-90.

Gefen, D., and Straub, D. "The Relative Importance of Perceived Ease-of-Use in IS Adoption: A Study of e-Commerce Adoption," *Journal of AIS* (1:8), 2000, pp. 1-30.

George, J. "Influences on the Intent to Make Internet Purchases," *Internet Research* (12:2), 2002, pp. 165-180.

Gollwitzer, P. M. "Implementation Intentions: Strong Effects of Simple Plans," *American Psychologist* (54) 1999, pp. 493-503.

Hoffman, D., Novak, T., and Peralta, M. "Building Consumer Trust Online," *Communications of the ACM* (42:4), 1999, pp. 80-85.

Hosmer, T. "Trust: The Connecting Link between Organizational Theory and Philosophical Ethics," *Academy of Management Review* (20:2), 1995, pp.379-403.

Ives, B., and Learmonth, G. P. "The Information System as a Competitive Weapon," *Communications of the ACM* (27), 1984, pp. 1193-1201.

Ives, B., Olson, M. H., and Baroudi, J. J. "The Measurement of User Information Satisfaction," *Communications of the ACM* (26:10), 1983, pp. 785-793.

Jarvenpaa, S. L., Tractinsky, N., and Vitale, M. "Consumer Trust in an Internet Store," *Information Technology and Management* (1:12), 2000, pp. 45-71.

Jiang, Z., and Benbasat, I. "Virtual Product Experience: Effects of Visual and Functional Control of Products on Perceived Diagnosticity in Electronic Shopping," *Journal of Management Information Systems* (21:3), 2004, pp. 111-147.

Kalakota, R., and Whinston, A. *Electronic Commerce: A Manager's Guide*, Addison-Wesley, Reading, MA, 1997.

Karahanna, E., Straub, D. W., and Chervany, N. L. "Information Technology Adoption across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs," *MIS Quarterly* (23:2) 1999, pp. 183-213.

Kempf, D. S., and Smith, R. E. "Consumer Processing of Product Trial and the Influence of Prior Advertising: A Structural Modeling Approach," *Journal of Marketing Research* (35:3), 1998, pp. 325-338.

Kim, D., and Benbasat, I. "Trust-Related Arguments in Internet Stores: A Framework for Evaluation," *Journal of Electronic Commerce Research* (4:2), 2003, pp. 49-64.

Koufaris, M. "Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior," *Information Systems Research* (13:2), 2002, pp. 205-223.

Law, K. S., Wong, C. S., and Mobley, W. H. "Toward a Taxonomy of Multidimensional Constructs," *Academy of Management Review* (23:4), 1998, pp. 741-755.

Lepper, M. R. "Microcomputers in Education: Motivational and Social Issues," *American Psychologist* (40:1), 1985, pp. 1-18.

Lewicki, R. J., and Bunker, B. B. "Trust in Relationships: A Model of Trust Development and Decline," in *Conflict, Cooperation, and Justice*, B. B. Bunker and J. Z. Rubin (eds.), Jossey-Bass, San Francisco, 1995, pp. 133-173.

Liang, T. P., and Huang, J. S. "An Empirical Study on Consumer Acceptance of Products in Electronic Markets: A Transaction Cost Model," *Decision Support Systems* (24:1), 1998, pp. 29-43.

Limayem, M., and Hirt, S. G. "Force of Habit and Information Systems Usage: Theory and Initial Validation," *Journal of the Association of Information Systems* (4:3), 2003, pp. 65-97.

Lohmoller, J. B. "The PLS Program System: Latent Variables Path Analysis with Partial Least Squares Estimation," *Multivariate Behavioral Research* (23), 1989, pp. 125-127.

Lohse, G. L., and Spiller, P. "Electronic Shopping," *Communications of the ACM* (41:7), 1998, pp. 81-87.

Luhmann, N. *Trust and Power*, John Wiley and Sons, London, 1979.

Mathieson, K. "Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior," *Information Systems Research* (2:3), 1991, pp. 173-191.

Mawhinney, C., and Lederer, C. "A Study of Personal Computer Utilization by Managers," *Information and Management* (18:5), 1990, pp. 243-253.

Mayer, R. C., Schoorman, F. D., and Davis, J. H. "An Integrative Model of Organizational Trust," *Academy of Management Review* (20:3), 1995, pp. 709-734.

McKnight, D. H., and Chervany, N. L. "What Trust Means in E-Commerce Customer Relationships: An Interdisciplinary Conceptual Typology," *International Journal of Electronic Commerce* (6:2), 2002, pp. 35-60.

Olson, J. S., and Olson, G. M. "i2i Trust in e-commerce," *Communications of the ACM* (43:12), 2000, pp. 41-44.

Palmer, J. "Web Site Usability, Design, and Performance Metrics," *Information Systems Research* (13), 2002, pp. 151-167.

Pavlou, P. A. "Consumer Acceptance of Electronic Commerce: Integrating Trust and Risk with the Technology Acceptance Model," *International Journal of Electronic Commerce* (7:3), 2003, pp. 69-103.

Pavlou, P. A., and Gefen, D. "Building Effective Online Marketplaces with Institution-Based Trust," *Information Systems Research* (15:1), 2004, pp. 35-62.

Podsakoff, P. M., and Organ, D. W. "Self-Reports in Organizational Research: Problems and Prospects," *Journal of Management* (12:4), 1986, pp. 531-544.

Povey, R., Conner, M., Sparks, J., James, R., and Shepherd, R. "Application of the Theory of Planned Behavior to Two Dietary Behaviours: Roles of Perceived Control and Self-Efficacy," *British Journal of Health Psychology* (5:2), 2000, pp. 121-139.

Rose, G., Khoo, H., and Straub, D. W. "Current Technological Impediments to Business-to-Consumer Electronic Commerce," *Communications of the AIS* (1:16), 1999, pp. 1-73.

Salisbury, W., Pearson, R., Pearson, A., and Miller, D. "Identifying Barriers That Keep Shoppers Off the World Wide Web: Developing a Scale of Perceived Web Security," *Industrial Management & Data Systems* (101:4), 2001, pp. 165-176.

Sheeran, P., and Orbell, S. "Implementation Intentions and Repeated Behavior: Augmenting the Predictive Validity of the Theory of Planned Behavior," *European Journal of Social Psychology* (29:2), 1999, pp. 349-369.

Sheppard, B. H., Hartwick, J., and Warshaw, P. "The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications and Future Research," *Journal of Consumer Research* (15:3), 1988, pp. 325-343.

Stewart, D. W., and Pavlou, P. A. "Substitution and Complementarity: Measuring the Effectiveness of Interactive Marketing Communications," *Journal of the Academy of Marketing Science* (30:4), 2002, pp. 376-396.

Straub, D. W. "Validating Instruments in MIS Research," *MIS Quarterly* (13:2), 1989, pp. 147-169.

Straub, D. W., Boudreau, M. C., and Gefen, D. "Validation Guidelines for IS Positivist Research," *Communications of the AIS* (13), 2004, pp. 380-427.

Tan, Y. H., and Thoen, W. "Toward a Generic Model of Trust for Electronic Commerce," *International Journal of Electronic Commerce* (5:2), 2001, pp. 61-74.

Taylor, S., and Todd, P. A. "Decomposition and Crossover Effects in the Theory of Planned Behavior: A Study of Consumer Adoption Intentions," *International Journal of Research in Marketing* (12), 1995a, pp. 137-156.

Taylor, S., and Todd P. A. "Understanding Information Technology Usage: A Test of Competing Models," *Information Systems Research* (6:3), 1995b, pp. 144-176.

Trafimow, D., Sheeran, P., Conner, M., and Finlay, K. "Evidence that Perceived Behavioral Control is a Multi-Dimensional Construct: Perceived Control and Perceived Difficulty" *British Journal of Social Psychology* (41:1), 2002, pp. 101-121.

Triandis, H. C. "Values, Attitudes, and Interpersonal Behavior," in *Nebraska Symposium on Motivation, 1979*, H. E. How, Jr. (ed.), University of Nebraska Press, Lincoln, NE, 1979, pp. 195-259.

Werts, C. E., Linn, R. L., and Jöreskog, K. G. "Interclass Reliability Estimates: Testing Structural Assumptions," *Education and Psychological Measurement* (34:1), 1974, pp. 25-33.

Zajonc, R. B. "The Attitudinal Effects of Mere Exposure," *Journal of Personality and Social Psychology* (9:1), 1968, pp. 1-27.

Zand, D. "Trust and Managerial Problem Solving," *Administrative Science Quarterly* (17:2), 1972, pp. 229-239.

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Appendix A

Measurement Items for Principal Constructs

GETTING INFORMATION
During the last 30 days, I got information about this product from this website (Yes/No)
Intentions to Get Information
I intend to get information about this product from this website within the next 30 days: (Extremely unlikely/likely) I plan to get information about this product from this website within the next 30 days: (Strongly disagree/agree
Attitude toward Getting Information
For me, getting information about this product from this website within the next 30 days would be: (1: a very bad/good idea, 2: very foolish/wise)
Subjective norm on Getting Information
Most people who are important to me think it is a good idea to get information about this product from this website: (Not at all/Completely true) Most people who are important to me would get information about this product from this website: (Not at all/Completely true)
Perceived Behavioral Control over Getting Information (Indicator)
Please rate the *difficulty* of you getting information about this product from this website within the next 30 days: (Extremely difficult easy)
Self-Efficacy over Getting Information
If I wanted to, I would be *able* to get information about this product from this website within the next 30 days: (Strongly disagree/agree) If I wanted to, I am *confident* I could get information about this product from this website within the next 30 days: (Strongly disagree/agree)
Controllability over Getting Information
All *necessary resources* for getting information about this product from this website will be *accessible* to me within the next 30 days: (Strongly disagree/agree) Getting information about this product from this website within the next 30 days is *completely under my control*: (Strongly disagree/agree)
Trust – Getting Information
b. This Web vendor would be *competent* in providing *objective* information about this product: (Extremely unlikely/likely) e. For me, getting *objective* product information from a website is: (Not at all/Extremely important) b. This Web vendor would be *honest* in providing *accurate* information about this product: (Extremely unlikely/likely) e. For me, getting *accurate* product information from a website is: (Not at all/Extremely important)
Perceived Usefulness of Getting Information
b. This website would be useful for getting *valuable* information about this product: (Extremely unlikely/likely) e. For me, getting *valuable* information about a product from a website is: (Not at all /Extremely important) b. This website would enhance my effectiveness in getting *useful* information about this product: (Extremely unlikely/likely) e. For me, getting *useful* information about a product from a website is: (Not at all /Extremely important)
Perceived Ease of Getting Information
b. Getting information about this product from this website would be *easy*: (Extremely unlikely/likely) e. For me, getting product information *easily* from a website is: (Not at all /Extremely important) b. Learning how to get information about this product from this website would be *easy*: (Extremely unlikely/likely) e. For me, learning how to get product information *easily* from a website is: (Not at all /Extremely important)

Time Resources
c. I expect to have the *time* needed to get information from this website within the next 30 days: (Strongly disagree/agree)
p. Having the *time* needed would make it (much more difficult/easier) for me to get information about this product.
c. There would always be *time* for me to get information from this website within the next 30 days: (Strongly disagree/agree)
p. Finding *time* would make it (much more difficult/easier) for me to get information about this product.
Download Delay
c. I expect the *speed* by which this website would *provide* information to be *fast* enough: (Strongly disagree/agree)
p. The *speed* by which a website *provides* information would make it (much more difficult/easier) for me to get information about this product.
c. I expect the *rate* at which the information would be *displayed* on this website to be *fast* enough: (Strongly disagree/agree)
p. A fast *rate* at which websites *display* information would make it (much more difficult/easier) for me to get information about this product.
Website Navigability
c. I expect the *sequencing of hyperlinks* in this website to be *clear*: (Strongly disagree/agree)
p. Having a *clear sequence of hyperlinks* would make it (much more difficult/ easier) for me to get information about this product.
c. I expect the *layout* of this website to be *intuitive*: (Strongly disagree/agree)
p. A website with an *intuitive layout* would make it (much more difficult/ easier) for me to get information about this product.
Getting Information Skills
c. If I wanted to, I could become *skillful at comparing and evaluating* products on this website: (Strongly disagree/agree)
p. *Becoming skillful* would make it (much more difficult/easier) for me to get information about this product.
c. If I wanted to, I could easily become *knowledgeable* about *getting all relevant information* about products from this website: (Strongly disagree/agree).
p. Becoming knowledgeable about getting information would make it (much more difficult/easier) for me to get all relevant information about this product from this Web vendor.
Getting Information Habit
Getting product information from this vendor's website has become a habit for me: (Strongly disagree/agree)
Getting product information from this website has become natural for me: (Strongly disagree/agree)
Past Experience – Getting Information
How long have you been using the Internet for getting information about products? ____ years.
During the last 30 days, how much time did you spend on the Internet getting product information *in general*? ____ hours.
During the last year, how many times have you made product purchases from the *selected Web vendor*? _____ times.
PURCHASING
During the last 30 days, I purchased this product from this Web vendor (Yes/No).
Purchasing Intentions
I intend to purchase this product from this website within the next 30 days. (Extremely unlikely/likely)
I plan to purchase this product from this website within the next 30 days. (Strongly disagree/agree)
Purchasing Attitude
For me, purchasing this product from this Web vendor within the next 30 days would be: (1: a very bad/good idea, 2: very undesirable/desirable)

Purchasing Subjective Norm
Most people who are important to me think that it is fine to purchase a product from this Web vendor within the next 30 days: (Not at all/Completely true) Most people who are important to me would purchase this product from this Web vendor: (Not at all/Completely true)
Perceived Behavioral Control over Purchasing
Please rate the *difficulty* of you purchasing this product from this Web vendor within the next 30 days: (Extremely difficult/easy)
Purchasing Self-Efficacy
If I wanted to, I would be *able* to purchase this product from this Web vendor within the next 30 days: (Strongly disagree/agree) If I wanted to, I am *confident* I could purchase this product from this Web vendor within the next 30 days: (Strongly disagree/agree)
Purchasing Controllability
All *necessary resources* for purchasing this product from this Web vendor will be *accessible* to me within the next 30 days: (Strongly disagree/agree) Purchasing this product from this Web vendor will be *completely under my control* within the next 30 days: (Strongly disagree/agree)
Trust – Purchasing
b. This Web vendor would be *competent* in delivering this product in a *timely fashion*: (Extremely unlikely/likely) e. For me, *product delivery in a timely fashion* is: (Not at all/Extremely important) b. This Web vendor would be *honest in its dealings* when I purchase this product from it: (Extremely unlikely/likely) e. For me, a Web vendor that is *honest in its dealings* with its customers is: (Not at all/Extremely important) b. This Web vendor would *not seek to take advantage of me* if I purchase this product from it: (Extremely unlikely/likely) e. For me, a Web vendor that does not seek to take advantage of its customers is: (Not at all/Extremely important)
Perceived Purchasing Usefulness
b. This website would be *useful* in purchasing this product: (Extremely unlikely/likely) e. For me, a website that is useful in purchasing products is: (Not at all /Extremely important) b. This website would *enhance my effectiveness* in purchasing this product: (Extremely unlikely/likely) e. For me, a website that enhances my effectiveness in purchasing products is: (Not at all /Extremely important)
Perceived Ease of Purchasing
b. Purchasing this product from this website would be *easy*: (Extremely unlikely/likely) e. For me, purchasing products *easily* from a Web vendor is: (Not at all /Extremely important) b. Learning how to purchase this product from this Web vendor would be *easy*: (Strongly disagree/agree) e. For me, learning how to purchase products *easily* from a Web vendor is: (Not at all /Extremely important)
Product Value
b. Purchasing this product from this Web vendor would *save me money* within the next 30 days: (Extremely unlikely/likely) e. For me, *saving money* within the next 30 days is: (Not at all /Extremely important) b. I would purchase this product from this Web vendor at a *bargain price* within the next 30 days: (Extremely unlikely/likely) e. For me, getting products at *bargain prices* within the next 30 days is: (Not at all /Extremely important)
Monetary Resources
c. I expect to have the *money needed* to purchase this product from this Web vendor within the next 30 days: (Strongly disagree/agree) p. Having the *money needed* to purchase products would make it (much more difficult/easier) for me to purchase this product from this Web vendor. c. It would be *within my budget* to purchase this product from this Web vendor within the next 30 days: (Strongly disagree/agree) p. Being *within my budget* would make it (much more difficult/ easier) for me to purchase this product from this Web vendor.

Perceived Diagnosticity
c. I expect this website to help me get a *real feel* for this product: (Strongly disagree/agree) p. Being able to get a *real feel* for a product would make it (much more difficult/ easier) for me to purchase this product from this Web vendor. c. I expect this website to help me *carefully evaluate* this product: (Strongly disagree/agree) p. Being able to *carefully evaluate* a product would make it (much more difficult/easier) for me to purchase this product from this Web vendor.
Perceived Information Protection
c. I expect my *personal information* to be adequately protected when I purchase this product from this Web vendor: (Strongly disagree/agree) p. An adequate protection of my *personal information* would make it (much more difficult/easier) for me to purchase this product from this vendor. c. I feel secure that my *personal information* is kept private when I purchase this product from this Web vendor: (Strongly disagree/agree). p. Feeling secure that *personal information* is kept private would make it (much more difficult/easier) for me to purchase this product from this Web vendor.
Purchasing Skills
c. If I wanted to, I could become *skillful* at making *good product purchasing decisions* on the Web: (Strongly disagree/agree). p. Becoming *skillful at making good purchasing decisions* on the Web would make it (much more difficult/easier) for me to purchase this product from this Web vendor. c. If I wanted to, I could easily become *knowledgeable* about purchasing products on the Web: (Strongly disagree/agree). p. Becoming knowledgeable about Web purchasing would make it (much more difficult/easier) for me to purchase this product from this Web vendor.
Purchasing Habit
Getting product information from this vendor's website has become a habit for me: (Strongly disagree/agree) Getting product information from this website has become natural for me: (Strongly disagree/agree)
Past Experience – Purchasing
During the last year, how many times have you made product purchases from the Internet *in general*? ____times. During the last year, how much have you approximately spent on Internet purchases? $ ____. During the last year, how many times have you made product purchases from the *selected Web vendor*? ____ times.
Web Vendor Reputation
This Web vendor has a *good reputation in the marketplace*: (Strongly disagree/agree)

LEGEND: b: attitudinal belief strength
e: belief power (outcome evaluation)
c: control belief strength
p: belief power (perceived facilitation)

Appendix B

PLS Confirmatory Factor Analysis for Discriminant and Convergent Validity

		Getting Information													Purchasing													
	ITEMS	GET	INT	ATT	SN	SE	CON	TR	PU	PE	TIM	DEL	NAV	SK	PUR	INT	ATT	SN	SE	CON	TR	PU	PE	VAL	MON	DIA	PR	SK
GETTING INFORMATION	GET1	**1.0**	.40	.34	.01	.12	.16	.05	.10	.11	.08	.13	.10	.03	.34	.30	.24	.01	.12	.16	.09	.10	.03	.08	.10	.13	.19	.04
	INT1	.38	**.92**	.46	.15	.25	.30	.33	.32	.35	.24	.27	.31	.16	.19	.32	.29	-.03	.16	.14	.21	.14	.09	.06	.14	.23	.25	-.03
	INT2	.36	**.88**	.39	.11	.29	.32	.34	.30	.30	.19	.26	.25	.18	.22	.40	.33	-.04	.19	.11	.20	.17	.05	.03	.10	.20	.20	.01
	ATT1	.35	.35	**.94**	.28	.40	.30	.44	.37	.44	.32	.30	.41	.25	.13	.26	.44	.14	.20	.31	.21	.30	.26	.15	.17	.25	.21	.14
	ATT2	.33	.38	**.93**	.23	.31	.32	.41	.39	.39	.33	.29	.37	.36	.17	.29	.46	.10	.20	.18	.16	.22	.28	.21	.25	.20	.17	.18
	SN1	.05	.10	.25	**.81**	.12	.15	.20	.16	.22	.14	.17	.10	.19	-.04	.02	.12	.34	.08	.10	.08	.13	.11	.14	.04	.12	.03	.10
	SN2	.01	.06	.32	**.76**	.10	.14	.18	.19	.15	.10	.11	.05	.15	.04	.06	.10	.40	.04	.07	.05	.10	.05	.06	.09	.05	.08	.05
	SE1	.14	.33	.33	.16	**.90**	.47	.30	.33	.40	.42	.45	.37	.30	.10	.20	.12	.05	.47	.39	.23	.22	.30	.12	.19	.20	.12	.21
	SE2	.10	.27	.38	.09	**.94**	.49	.26	.35	.38	.40	.38	.41	.35	.08	.15	.17	.07	.44	.30	.28	.26	.25	.17	.12	.22	.08	.18
	CON1	.19	.31	.29	.12	.40	**.84**	.39	.26	.34	.29	.44	.30	.38	.10	.24	.17	.08	.30	.41	.17	.20	.17	.12	.22	.14	.10	.10
	CON2	.16	.27	.36	.18	.45	**.80**	.35	.32	.30	.33	.33	.28	.29	.15	.20	.26	.12	.37	.29	.30	.15	.21	.19	.13	.20	.05	.05
	TR1	.09	.25	.41	.20	.28	.30	**.88**	.42	.40	.29	.39	.40	.29	.04	.15	.24	.10	.16	.20	.40	.30	.32	.20	.15	.10	.14	.11
	TR2	.11	.21	.30	.24	.33	.25	**.89**	.48	.37	.33	.41	.35	.37	.06	.10	.20	.06	.10	.16	.45	.32	.28	.16	.17	.14	.12	.09
	PU1	.17	.30	.39	.11	.30	.20	.42	**.87**	.48	.36	.40	.39	.38	.10	.16	.18	.05	.20	.12	.07	.40	.38	.13	.18	.21	.09	.17
	PU2	.13	.27	.45	.16	.32	.29	.45	**.91**	.44	.39	.43	.37	.40	.05	.13	.12	.04	.15	.15	.10	.30	.33	.20	.15	.16	.11	.13
	PE1	.13	.28	.28	.20	.39	.39	.36	.45	**.90**	.30	.39	.44	.35	.07	.16	.16	.05	.30	.25	.23	.25	.40	.20	.15	.11	.05	-.04
	PE2	.15	.33	.40	.25	.30	.30	.33	.40	**.89**	.32	.33	.40	.36	.05	.20	.14	.08	.20	.19	.28	.21	.42	.12	.16	.09	.12	.02
	TIM1	.08	.23	.25	.14	.29	.25	.30	.35	.34	**.93**	.38	.40	.47	.03	.15	.15	.07	.10	.15	.13	.16	.14	.10	.19	.21	.15	.14
	TIM2	.09	.15	.29	.14	.30	.33	.36	.41	.29	**.95**	.39	.35	.42	-.01	.13	.12	.04	.13	.12	.16	.19	.11	.07	.15	.08	.11	.07
	DEL1	.18	.20	.33	.16	.40	.40	.38	.36	.37	.36	**.95**	.49	.40	.10	.12	.21	.11	.25	.21	.12	.18	.15	.06	.04	.13	.06	.15
	DEL2	.16	.22	.36	.09	.38	.31	.39	.38	.31	.40	**.94**	.47	.36	.06	.08	.23	.09	.20	.19	.14	.25	.20	.09	.10	.08	-.04	.19
	NAV1	.09	.19	.42	.15	.35	.18	.41	.37	.40	.42	.45	**.90**	.39	.04	.10	.22	.10	.12	.15	.20	.21	.13	.10	.06	.10	.06	.24
	NAV2	.06	.24	.37	.18	.40	.32	.36	.41	.38	.45	.43	**.88**	.37	-.01	.13	.20	.11	.15	.21	.17	.14	.18	.12	.09	.05	.10	.24
	SK1	.04	.12	.15	.07	.25	.19	.28	.35	.33	.49	.39	.36	**.92**	-.03	.05	.09	.04	.13	.08	.14	.17	.20	.05	.10	.14	.08	.45
	SK2	.02	.09	.30	.12	.28	.25	.33	.30	.34	.39	.27	.40	**.94**	-.06	.02	.12	-.02	.11	.10	.10	.13	.14	.14	.02	.03	.10	.40

	ITEMS	Getting Information													Purchasing													
		GET	INT	ATT	SN	SE	CON	TR	PU	PE	TIM	DEL	NAV	SK	PUR	INT	ATT	SN	SE	CON	TR	PU	PE	VAL	MON	DIA	PR	SK
PURCHASING	PUR1	.37	.27	.25	.01	.13	.13	.10	.08	.06	.05	.04	.01	-.05	**1.0**	.47	.40	.12	.30	.36	.09	.10	.18	.04	.15	.16	.14	-.01
	INT1	.25	.30	.23	.09	.18	.20	.11	.15	.18	.10	.10	.13	.03	.48	**.98**	.49	.32	.30	.35	.24	.33	.30	.36	.40	.23	.16	.26
	INT2	.17	.35	.18	.05	.16	.25	.06	.11	.21	.16	.11	.11	-.01	.42	**.96**	.46	.29	.25	.29	.19	.26	.24	.32	.36	.26	.20	.21
	ATT1	.24	.31	.38	.10	.11	.16	.21	.17	.15	.16	.20	.24	.08	.39	.47	**.91**	.36	.35	.37	.30	.35	.33	.35	.41	.29	.20	.27
	ATT2	.30	.37	.32	.02	.15	.20	.20	.20	.17	.13	.19	.26	.11	.44	.48	**.93**	.39	.30	.38	.31	.32	.29	.26	.33	.32	.28	.17
	SN1	-.02	.00	.12	.37	.04	.10	.08	-.03	.04	.08	.06	.09	.02	.10	.30	.35	**.84**	.30	.28	.35	.26	.37	.33	.39	.10	.21	.21
	SN2	.04	.02	.07	.32	-.02	.15	.07	.00	.01	.05	.12	.14	-.03	.06	.35	.36	**.80**	.27	.32	.31	.22	.26	.31	.35	.20	.18	.24
	SE1	.16	.11	.25	.14	.36	.32	.15	.16	.26	.11	.20	.15	.10	.28	.27	.32	.28	**.98**	.47	.36	.40	.41	.30	.28	.25	.22	.29
	SE2	.18	.13	.16	.10	.35	.33	.12	.12	.23	.15	.23	.12	.16	.29	.29	.36	.31	**.92**	.44	.35	.36	.34	.25	.33	.26	.26	.35
	CON1	.12	.20	.25	.06	.30	.30	.18	.10	.28	.14	.20	.19	.14	.28	.30	.35	.30	.51	**.93**	.30	.35	.40	.30	.35	.36	.30	.35
	CON2	.16	.18	.22	.09	.29	.34	.17	.16	.22	.12	.18	.17	.17	.31	.31	.39	.34	.48	**.92**	.32	.29	.42	.28	.31	.38	.32	.39
	TR1	.11	.15	.19	.03	.20	.24	.42	.12	.19	.15	.10	.24	.15	.13	.15	.29	.33	.37	.33	**.91**	.46	.51	.36	.30	.40	.45	.43
	TR2	.09	.13	.20	-.04	.29	.20	.47	.11	.21	.13	.15	.15	.12	.15	.19	.26	.31	.33	.26	**.89**	.39	.47	.29	.35	.35	.40	.36
	TR3	.14	.13	.16	.06	.26	.21	.39	.14	.15	.15	.13	.23	.16	.10	.20	.30	.24	.32	.29	**.79**	.42	.46	.30	.26	.41	.35	.44
	PU1	.18	.16	.26	.10	.20	.17	.33	.35	.26	.20	.17	.20	.18	.09	.30	.36	.27	.39	.33	.40	**.90**	.46	.25	.30	.40	.25	.44
	PU2	.19	.10	.21	.11	.28	.23	.37	.30	.22	.17	.20	.18	.12	.15	.29	.33	.22	.35	.36	.41	**.88**	.50	.29	.31	.35	.29	.41
	PE1	.10	.05	.29	.08	.25	.15	.30	.28	.35	.21	.14	.10	.23	.14	.27	.25	.30	.40	.41	.45	.47	**.95**	.30	.33	.39	.44	.46
	PE2	.14	.03	.22	.06	.24	.25	.28	.34	.32	.17	.18	.16	.13	.07	.32	.31	.27	.42	.38	.43	.45	**.91**	.35	.29	.35	.29	.43
	VAL1	.12	.08	.12	.12	.15	.10	.22	.15	.19	.15	.09	.14	.07	.13	.35	.34	.30	.26	.33	.32	.20	.32	**.89**	.25	.23	.20	.18
	VAL2	.11	.04	.23	.09	.18	.17	.19	.10	.20	.09	.08	.11	.03	.10	.34	.32	.35	.30	.35	.26	.30	.26	**.87**	.23	.20	.16	.24
	MON1	.18	.06	.12	.00	.12	.20	.12	.17	.14	.11	.05	.09	.10	.04	.38	.39	.36	.26	.30	.30	.35	.36	.30	**.96**	.30	.20	.40
	MON2	.13	.09	.15	.01	.17	.18	.18	.19	.18	.19	.06	.10	.06	.10	.40	.37	.25	.33	.36	.32	.32	.40	.20	**.92**	.25	.17	.28
	DIA1	.26	.10	.21	.10	.16	.10	.09	.20	.10	.16	.10	.13	.12	.07	.25	.33	.14	.26	.40	.37	.39	.39	.18	.29	**.86**	.23	.44
	DIA2	.20	.12	.25	.07	.20	.15	.18	.15	.12	.20	.14	.08	.09	.10	.20	.35	.18	.23	.33	.38	.37	.35	.25	.27	**.90**	.17	.45
	PR1	.19	.17	.14	.02	.10	.09	.18	.10	.06	.14	.05	.07	.09	.15	.22	.30	.20	.24	.27	.38	.28	.40	.22	.19	.30	**.95**	.30
	PR2	.23	.19	.19	.03	.07	.12	.13	.14	.09	.17	.02	.11	.15	.11	.15	.19	.15	.27	.31	.43	.31	.42	.17	.15	.14	**.90**	.33
	SK1	.05	-.06	.09	.06	.25	.10	.09	.19	.03	.10	.10	.23	.43	.00	.28	.25	.20	.33	.40	.40	.45	.47	.19	.35	.40	.40	**.90**
	SK2	.08	.03	.08	.05	.16	.03	.14	.16	.01	.08	.20	.23	.46	.05	.23	.21	.22	.31	.37	.44	.40	.45	.25	.31	.46	.29	**.84**

Legend: GET: Getting Information; INT: Intention; ATT: Attitude; SN: Subjective Norm; SE: Self-Efficacy; CON: Controllability; TR: Trust; PU: Perceived Usefulness; PE: Perceived Ease of Use; TIM: Time Resources; DEL: Download Delay; NAV: Navigability; SK: Consumer Skills; PUR: Purchasing; VAL: Product Value; MON: Monetary Resources; DIA: Product Diagnosticity; PR: Information Protection