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Trust and Satisfaction, Two Stepping Stones for Successful E-Commerce Relationships: A Longitudinal Exploration

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Trust and satisfaction are essential ingredients for successful business relationships in business-to-consumer electronic commerce. Yet there is little research on trust and satisfaction in e-commerce that takes a longitudinal approach. Drawing on three primary bodies of literature, the theory of reasoned action, the extended valence framework, and expectation-confirmation theory, this study synthesizes a model of consumer trust and satisfaction in the context of e-commerce. The model considers not only how consumers formulate their prepurchase decisions, but also how they form their long-term relationships with the same website vendor by comparing their prepurchase expectations to their actual purchase outcome. The results indicate that trust directly and indirectly affects a consumer's purchase decision in combination with perceived risk and perceived benefit, and also that trust has a longer term impact on consumer e-loyalty through satisfaction. Thus, this study extends our understanding of consumer Internet transaction behavior as a three-fold (prepurchase, purchase, and postpurchase) process, and it recognizes the crucial, multiple roles that trust plays in this process. Implications for theory and practice as well as limitations and future directions are discussed.

Key words: trust in e-commerce; consumer satisfaction; purchase and repurchase intentions in B2C e-commerce; e-loyalty; extended valence framework; expectation-confirmation theory
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1. Introduction

Trusted processes are a key success factor in online e-commerce (Kim et al. 2005). Accordingly, online sellers need to create an environment in which a consumer can be confident about any online transactions. Two elements of such a facilitating environment are trust and satisfaction—both essential ingredients for successful long-term business relationships with customers (Balasubramanian et al. 2003, Doney and Cannon 1997, Morgan and Hunt 1994). The first ingredient, trust, plays a vital role in almost any commerce involving monetary transactions. Trust may be even more critical in e-commerce because an Internet purchase is based on the consumer's confidence in processes that are not transparent online, in contrast to that of traditional brick-and-mortar businesses where trust is based on personal relationships and face-to-face interactions between the consumer and the merchant. Hand-in-hand with trust is the second ingredient—satisfaction—which is a particularly important foundation for a successful long-term relationship. Consumer satisfaction is an attitude formed through a mental comparison of the service and product quality that a customer expects to receive from an exchange with the level of quality the consumer perceives after actually having received the service/product (Oliver 1980, 1999; Parasuraman et al. 1988).

The consumer purchase process consists of three general phases of behavior: prepurchase, purchase, and postpurchase. These phases occur in e-commerce tran-

sactions as well as traditional transactions (Blackwell and Stephan 2001). Several studies (Agustin and Singh 2005, Bhattacherjee and Premkumar 2004, Kim et al. 2004, McKinney et al. 2002, Pavlou and Gefen 2004) have identified trust and/or satisfaction as important ingredients for successful e-commerce transactions. However, existing research has not yet linked trust and satisfaction theoretically over the longitudinal phases, from prepurchase to purchase and postpurchase, in the e-commerce context. In fact, five meta-analytic studies (Chang et al. 2005, Geyskens et al. 1998, Grabner-Krauter and Kaluscha 2003, Saeed et al. 2003, Wareham et al. 2005) have noted that existing research on consumer trust and/or satisfaction in e-commerce transactions has not adequately examined such transactions longitudinally.

This is a crucial omission and an important topic to be investigated because the consumer's repurchase process is likely to differ qualitatively from the prepurchase process. Repurchase is distinct from prepurchase because the consumer has prior experience to draw on and has formed a level of satisfaction that is likely to influence future purchase decisions. Therefore, additional theoretical insights are needed to understand the repurchase process, and how factors that predict prepurchase decisions combine with purchase outcomes to influence future purchase decisions. In addition, whereas the effects of trust on prepurchase *intentions* have been considered in previous studies, only a few studies have focused on actual purchase behavior in the context of e-commerce (Grabner-Krauter and Kaluscha 2003).

Thus, there is clearly a need to study trust and satisfaction in e-commerce from a longitudinal perspective, including the examination of trust-related behaviors. The present study attempts to address these gaps by proposing and empirically testing *a longitudinal trust-satisfaction theory* that synthesizes two frameworks: the extended valence framework and expectation-confirmation theory (ECT).

2. Background Theories

The theory of reasoned action (TRA) (Fishbein and Ajzen 1975) provides a background for understanding the relationship between attitudes, intentions, and behaviors. The TRA is based on the assumption that human beings make rational decisions based on the information available to them, and the best immediate determinant of a person's behavior is intent, which is the cognitive representation of readiness to perform a given behavior (Ajzen and Fishbein 1980). According to the theory, the individual's attitude toward the behavior includes: behavioral belief, evaluations of the behavioral outcome, subjective norms, normative beliefs, and the motivation to comply (Ajzen and Fishbein 1980). Applying a more parsimonious version of the TRA (Davis 1989), McKnight et al. (2002a) proposed a Web Trust Model, which posits that trusting beliefs (perceptions of specific web vendor attributes) lead to trusting intentions, which in turn influence trust-related behaviors. We fundamentally embed our research on the TRA-based Web Trust Model of belief (attitude) → intention → behavior as proposed by McKnight et al. (2002a).

Two additional perspectives are identified as background frameworks for this study: the valence framework and ECT. The valence framework is derived primarily from the economics and psychology literature (Goodwin 1996). It has been used by game theorists (Harrington and Hess 1996) as well as marketing researchers to understand behaviors that incorporate the simultaneous perception of risk and benefit (Peter and Tarpey 1975). Summarizing studies on consumers' purchasing behavior, and articulating the valence framework, Peter and Tarpey (1975) noted that perceived risk and perceived benefit are fundamental aspects of consumer decision-making. On the one hand, the "perceived risk" perspective characterizes consumers as motivated to minimize, or at least reduce, any expected negative utility (perceived risk) associated with purchasing behavior. On the other hand, the "perceived benefit" perspective characterizes consumers as motivated to maximize, or at least increase, the positive utility (perceived benefit) of purchasing the product. Finally, the "perceived value" or valence framework assumes that consumers perceive products as having both positive and negative attributes, and accordingly make decisions to maximize *net* valence. Intuitively and conceptually, the valence framework is a superior model because it takes into account both positive and negative attributes of the decision (Peter and Tarpey 1975).

Recognizing that trust has been identified as a vital factor in the success of e-commerce (Gefen 2000, Kim

Figure 1 Extended Valence Framework

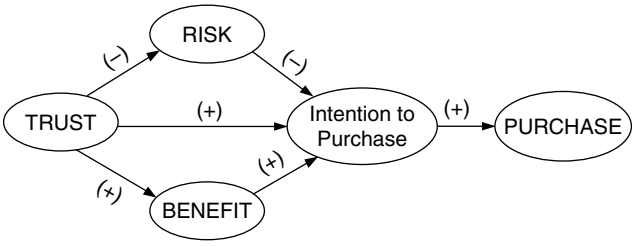
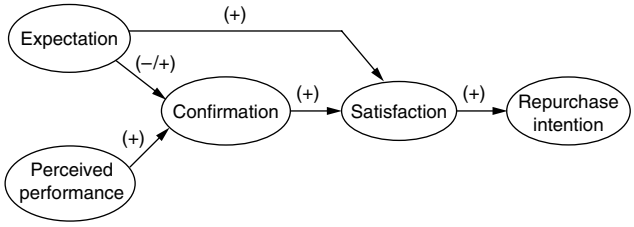


Figure 2 Expectation-Confirmation Theory



et al. 2005, McKnight and Chervany 2002, Pavlou and Fygenson 2006), we propose *an extended valence framework* that integrates the TRA-based Web Trust Model and the valence framework (see Figure 1). In the model, trust is assumed to affect purchase intention directly, and also indirectly through its two mediators, perceived risk and perceived benefit. Consistent with the TRA, purchase intention is posited to be an immediate determinant of the actual purchase behavior.

Whereas the completion of the first transaction is an important step in the business-to-consumer (B2C) relationship, the long-term relationship depends not only on the factors that fostered the initial purchase, but also on the outcomes of that initial purchase decision (Oliver 1993). If that initial exchange was satisfactory, the consumer is likely to demonstrate a continued interest in a website, which might lead to repeat transactions. However, if that initial exchange was unsatisfactory, the consumer will be much less likely to demonstrate such interest in the website or repeat transactions. ECT is widely used in the marketing and information systems literature (Bhattacherjee 2001, Oliver 1999) to study consumer satisfaction and repurchase intention and behavior. The underlying logic of the ECT framework is described by Oliver (1999) and Bhattacherjee (2001) as follows. First, consumers form an expectation of a specific product or service prior to a transaction. Second, after a period of consumption, they form perceptions about its performance. Third, they assess its perceived performance vis-à-vis their original expectation and determine the extent to which their expectation is confirmed. Fourth, they develop a satisfaction level based on their confirmation level and the expectation on which that confirmation was based. Finally, they form a repurchase intention based on their level of satisfaction (see Figure 2). Note that all constructs in ECT, except expectation, are postpurchase variables, and their assessment is based on the consumer's actual experiences with the Internet retailer (hereafter, the e-tailer).

3. Theory Development

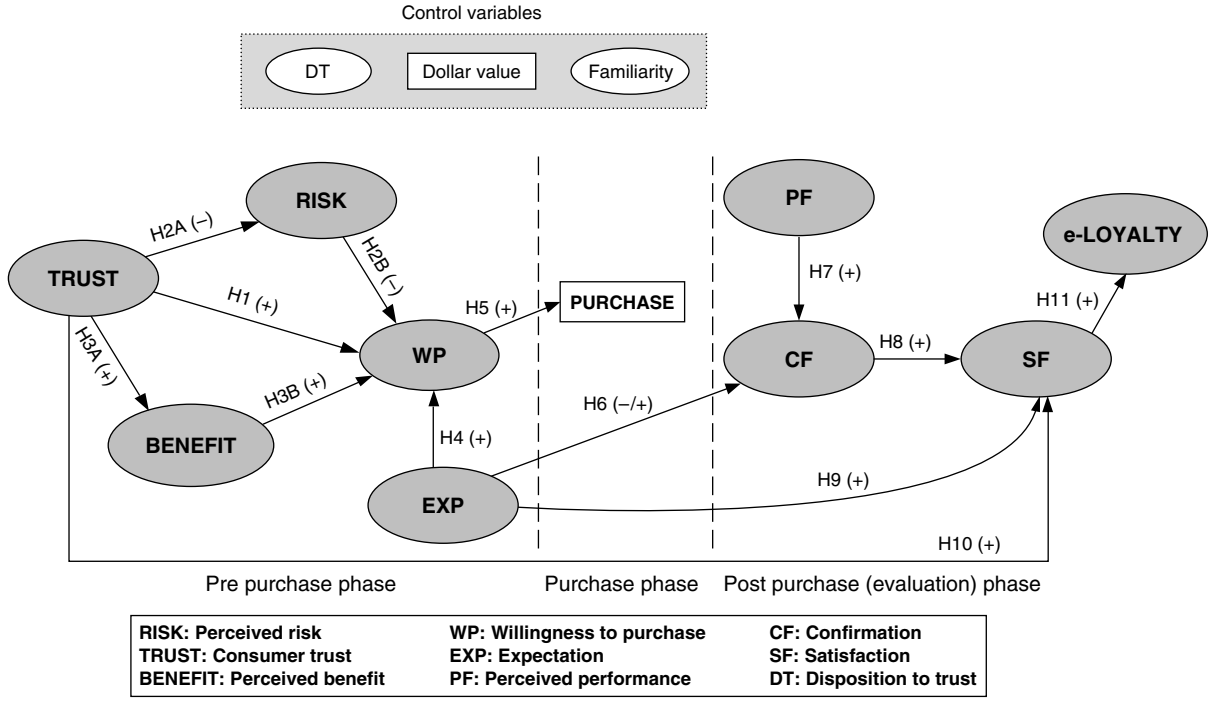
Adopting the background literatures (the extended valence framework and ECT) and synthesizing consumer trust and satisfaction through three stages (prepurchase, purchase, and postpurchase), we propose the research model in Figure 3. In the model, trust is assumed to affect purchase intention directly and also indirectly through its two mediators, perceived risk and benefit. We further consider not only how trust impacts initial purchase decisions, but also how it affects longer-term relationships through satisfaction. Specifically, we consider the effect of prepurchase trust on postpurchase satisfaction, which in turn should impact e-loyalty.

3.1. Prepurchase Phase

Prior trust research in traditional commerce has focused primarily on interpersonal trust, such as a consumer's trust in a salesperson. More recently, trust has been defined as a multidimensional concept related to multiple targets: salesperson, product, and company (Plank et al. 1999). On the Internet, an e-tailer's website, enabled by IT artifacts (i.e., hardware/software, combined systems, and networks), replaces a salesperson's functionalities. In this paper *Internet consumer trust* (*TRUST*) is defined as a consumer's subjective belief that the selling party or entity[1] on the Internet will fulfill its transactional obli-

[1] This study conceptualizes a consumer's trust in a selling party or entity that includes the website, website brand, and the firm as a whole (e.g., amazon.com). In other words, the selling party or entity refers to the firm as well as the website because it is through the website that all Internet transactions with the firm are conducted.

Figure 3 Research Model (a Longitudinal Trust-Satisfaction Model)



gations as the consumer understands them. The next two sections will consider how trust may impact e-commerce purchase decisions directly (main effect), and indirectly through mediators (i.e., via perceived risk and benefit).

3.1.1. Direct Effect of Trust. Several researchers have suggested that trust directly affects the consumer's willingness to transact with Internet vendors (Bhattacherjee 2002, Gefen 2002, McKnight and Chervany 2002). The TRA (Fishbein and Ajzen 1975) provides the underlying rationale for the effects of a consumer's beliefs on his or her purchase intentions. According to the TRA, one's belief or attitude towards a behavior is an immediate determinant of one's intention to perform a behavior. The organizational trust model of Mayer et al. (1995) extends this notion to the domain of trust. According to their model, an individual's beliefs about another's ability, benevolence, and integrity, should lead to a willingness to accept vulnerability (i.e., willingness to purchase (WP)), which in turn should lead to risk-taking behavior in a relationship (i.e., an actual purchase). Extending this idea to the Internet purchase experience, a higher level of trust in an entity such as an e-tailer should increase the likelihood that one will be willing to accept vulnerability by forming an intention to purchase, and then actually consummate the purchase.

In the context of e-commerce, because most transactions are conducted across large geographical distances, sight unseen, consumers are often very concerned that selling parties may not adhere to their transactional obligations. Thus, a consumer's belief (i.e., trust) concerning the online selling party is an important determinant of his or her willingness to make a transaction through the website. Thus, trust enables one to engage in an online transaction despite the presence of risk.

HYPOTHESIS 1. *A consumer's WP through the site is positively related to a consumer's trust* (*TRUST*).

3.1.2. Indirect Effects of Trust. In addition to the main effect of trust, we propose that trust operates in an indirect manner through two mediating variables, perceived risk and perceived benefit. *Perceived risk* (*RISK*) is defined in this study as a consumer's subjective belief about the potential uncertain negative values from the online transaction with the selling

party or entity. In the e-commerce context, consumers will always experience some level of risk because of the properties of the Internet mode of shopping (e.g., geographically distributed and sight-unseen purchasing) and the uncertainty and uncontrollability of e-commerce conditions. When consumers have to act in situations of uncertainty and risk, trust comes to the forefront. Indeed, others have observed that trust reduces the risks related to online transactions (Gefen 2002, McKnight et al. 2002b). The concept of perceived risk focuses on the consumer's concerns about whether the selling party will violate its formal and informal obligations, for instance by violating confidentiality norms, or violating product quality or delivery commitments. It stands to reason that a consumer who has a high level of trust in the selling party will perceive a relatively low likelihood that the selling party will violate such transactional obligations. This suggests that a high level of trust will cause the consumer to develop a relatively low level of perceived risk. In contrast, if a consumer had a relatively low level of trust in the selling party, he or she would probably be worried that the selling party would violate the transactional obligations, and consequently develop a relatively high level of perceived risk. Therefore, we hypothesize as follows.

Hypothesis 2A. *A consumer's perceived risk* (*RISK*) *about an Internet transaction through the site is negatively related to a consumer's trust* (*TRUST*).

It is common for a consumer who is making an online transaction for the first time to be reluctant to make a transaction on the web because the sense of risk in an Internet transaction may be overwhelming when compared to the traditional mode of shopping. In the case of a brick-and-mortar retail store (e.g., Wal-Mart), consumers can walk into the store and usually touch, feel, or even try the product before deciding to purchase it. This results in an immediate reduction in the amount of perceived risk, which should strengthen consumers' inclination to purchase. In the case of an online store, a consumer must provide a great deal of personal information, including address, phone number, and even confidential credit card information. Then the shopper can only hope that the transaction will be processed completely and accurately. In actuality, he or she will usually have to wait for days until the product or service is delivered and the transaction is completed. It may take months for the shopper to know whether his or her confidential information has been compromised. Thus, the Internet purchase is infused with risk, this risk is likely to be salient to many or most purchases, and perceptions of risk are likely to discourage consumers from forming an intention to purchase online.

Hypothesis 2B. *A consumer's WP through the site is negatively related to a consumer's perceived risk* (*RISK*).

Perceived Benefit (*BENEFIT*) in this study refers to a consumer's subjective perceptions about the potential positive values from the online transaction with a certain Website. The relationship between trust and benefits is a topic among researchers who have studied trust in business relationships and organizations. Research and evidence suggests that there is a positive relationship between trust and a variety of benefits. For example, trust can lead to greater productivity and profitability (Doney and Cannon 1997, Morgan and Hunt 1994), the reduction of transaction costs within organizations, spontaneous sociability, appropriate deference to organizational authorities (Kramer 1999), and can contribute to relationship-related benefits with trading partners (Ratnasingham 2002). Thus far, research on the trust-benefit relationship has focused primarily on trust between people (person-to-person), within organizations (person-to-organization), and between organizations (organization-to-organization). To our knowledge there is little research on the relationship between trust and benefits in the context of e-commerce.

In the e-commerce context, we suggest that consumers can save their efforts (e.g., search cost and comparison process), and even increase their productivity (e.g., better purchasing decisions in a short time frame) in shopping for products or services when they can transact with a trusted e-tailer. For example, by using convenient features (e.g., easy product navigation, few clicks to purchase, product recommendation agents, etc.) and by purchasing a product (even if it is not the cheapest available) via a trusted e-tailer's website, a consumer may gain a range of benefits from the online transaction such as cost savings, time savings, convenience, vast product selections, and ease of acquiring shopping information. Yet, these benefits

can be realized only if the e-tailer can be trusted to fulfill its obligations. A consumer who has a high level of trust in a selling party will by definition have confidence that the e-tailer will fulfill its obligations, and therefore can have greater confidence that the potential benefits of purchasing online will be realized. High trust in an e-tailer should cause a consumer to develop a relatively high level of perceived benefit. In contrast, if a consumer has a relatively low level of trust in the selling party, he or she is unlikely to expect the e-tailer to fulfill its obligations, and therefore is likely to realize a relatively low level of perceived benefit. Therefore, we hypothesize as follows.

Hypothesis 3A. *A consumer's perceived benefit* (*BENEFIT*) *of an Internet transaction through the site is positively related to a consumer's trust* (*TRUST*).

These perceived benefits provide potentially strong incentives to purchase the product or service online. In the case of a brick-and-mortar retail store, consumers can only view the products that are presently in stock, and the only information that will be available about the product is information provided in the retail store itself. At that point, consumers can only wonder whether the product or service is the best one to meet their needs, or whether alternate products or vendors might provide more advantageous features, prices, or terms. In contrast, when purchasing on the Internet, it is relatively easy for consumers to gather a great deal of information about the product from the manufacturer, professional reviewers, and past consumers. Consumers can also gather information about competing products and competing e-tailers. The ability to get this information can enhance one's perceived benefit of purchasing online because of its potential to provide information that the product is of sufficiently high quality, suitably meets one's needs, and is better than other alternative products and vendors. Thus, Internet purchasing offers substantial perceived benefits, these benefits are likely to be salient to many or most purchases, and perceptions of benefits are likely to encourage consumers to form an intention to purchase the product or service online. Hence, we hypothesize as follows.

Hypothesis 3B. *A consumer's WP through the site is positively related to a consumer's perceived benefit* (*BENEFIT*).

3.1.3. Effect of Expectation on Purchase Intention. There is no clear agreement in the literature about the conceptual definition of the expectation construct. Some view expectations as predictions of the likelihood of some event (i.e., what a consumer believes is likely to happen in the future) (Bearden and Teel 1983), whereas others view expectations as desires and/or perceptions (i.e., what consumers think should happen) (Churchill and Surprenant 1982). Similarly, three types of expectation have been suggested (McKinney et al. 2002): the "ideal expectation," the "should expectation," and the "will expectation" (Teas 1993). The "ideal expectation" highlights an optimal performance; the "should expectation" characterizes the normative standard for performance; and the "will expectation" focuses on predicting future performance. Oliver (1980) defines expectation somewhat more broadly as including two aspects: a predictive expectation (i.e., a probability of occurrence) and an evaluative expectation (an evaluation of the occurrence), which are in line with the "should expectation" and "will expectation."

Adopting Oliver's conceptual definition of expectation, we define *Expectation* (*EXP*) as what consumers predict they should and will receive from the e-tailer through a specific current e-commerce transaction. A consumer's e-commerce transaction expectation includes predictions about the quality of the purchasing process, product, and service that will be provided by the e-retailer. The link between a consumer's expectation about an online transaction with a certain e-tailer and the consumer's WP is an important aspect of repeated e-transactions. The basic argument on this relationship is that if a consumer has a higher expectation about the online transaction with a certain e-tailer, he or she will be more willing to make the transaction through that e-tailer's website. Therefore, we hypothesize as follows.

Hypothesis 4. *A consumer's WP through the site is positively related to his or her expectation* (*EXP*).

From three viewpoints, this hypothesized effect is distinct from the effects of perceived risk and perceived benefits on purchase intentions discussed above. First, perceived benefits and perceived risk reflect *consumers' value or utility perception* toward an e-commerce transaction with a certain e-tailer. Perceived value is defined as a subjective perception

of the trade-off between multiple benefits and sacrifices. Any e-commerce transaction engages not only the benefits gained, but also the sacrifices or investments that a customer makes to gain the benefits. In contrast, expectation is related to the *consumers' prediction or anticipation* of what they should and will get through a specific transaction with the selling party.

Second, a consumer's e-commerce transaction expectation represents both prior consumption experiences with the e-retailer's offering, including nonexperiential information available through sources such as advertising and word-of-mouth, and predictions of the e-retailer's ability to deliver quality in the purchasing process, product, and service. In other words, the expectation construct is both backward- and forward-looking: It captures all previous quality experiences and information and forecasts the e-retailer's ability to satisfy its customers in the future (Fornell et al. 1996). In contrast, perceived benefits and perceived risk reflect a consumer's forward perception and/or interpretation of relatively (but not entirely) certain positive values (i.e., gains) and very uncertain negative values (i.e., sacrifices), respectively. Thus, perceived benefits and perceived risk could be viewed and conceptualized as aggregations of different utilities or values of perceived benefits and perceived risk.

In addition, a consumer's expectation plays a connector role between the prepurchase and postpurchase (evaluation) phases, whereas perceived benefits and perceived risk do not. Based on prior direct and indirect experiences with a selling entity, a consumer has an expectation about the current transaction quality of a service and/or product that he or she will get from the e-retailer. This expectation is used as a performance evaluation criterion or standard of the e-commerce transaction in the postpurchase phase. Along with the expectation, the consumer perceives that there is a possibility of uncertain negative outcomes (e.g., product risk, financial risk, etc.) because of uncertainty of the future actions of others (e.g., the e-tailer may eavesdrop or misuse personal information). He or she also recognizes certain benefits (e.g., cheap price, saving shopping time, etc.) through the Internet transaction.

3.2. Purchase Phase

According to the TRA (Ajzen and Fishbein 1980), behavioral intention is a predictor of actual volitional behavior. Accordingly, we extend the transaction decision to two parts: WP and *completion of purchase* (*PURCHASE*). WP refers to the degree to which a consumer intends to make a transaction from a certain e-tailer, and PURCHASE is a consumer's actual transaction decision, which in our study will be measured with a single dichotomous (purchase or not purchase) indicator. The relationship between behavior intention and actual behavior is important in the purchase phase because purchase intention is a major determinant of purchase behavior (Ranganathan and Ganapathy 2002). To contrast it with latent variables, the actual binary-decision variable PURCHASE is illustrated as a white rectangle in the research model in Figure 3.

Hypothesis 5. *A consumer's WP through the site positively affects the completion of purchase* (*PURCHASE*).

3.3. Postpurchase Phase

After completing a transaction, consumers confirm their expectation through a postpurchase evaluation process and form their satisfaction level, which affects their future e-loyalty, including repurchase decisions. Thus, the postpurchase process is very different from the prepurchase process primarily because in the postpurchase phase the consumer has substantial and direct prior experience to draw on. In other words, in the postpurchase evaluation process, the product or service from the e-tailer will be evaluated in the context of the consumer's prior expectations and the actual performance of the product/service as perceived after its consumption. This postpurchase process may be explained by ECT. According to ECT, confirmation or disconfirmation is the evaluation process of comparing ex-ante expectation versus ex-post perceived performance across two different time periods (Bearden and Teel 1983, Oliver 1980).

As defined previously, EXP refers to a consumer's prediction (i.e., what they should and will receive from their e-tailer) about a specific transaction prior to purchasing the product/service from their e-tailer. EXP is used as an evaluation criterion in the postpurchase phase. *Perceived performance* (*PF*) is the consumer's perception of how the transaction, including product/service performance, fulfills his or her needs, wants, and desires (Churchill and Surprenant 1982). *Confirmation* (*CF*) is defined as the

consumer's subjective judgment of the transaction performance against some prepurchase standards (i.e., expectations).

Once consumers form their expectations, they compare their perceptions of transaction performance to the level of expectation. Confirmation occurs when consumer evaluations of transaction performance are greater than or equal to their expectations (i.e., PF > EXP, or PF = EXP), whereas disconfirmation occurs when their evaluations of performance are not good enough to fulfill their expectations (i.e., PF < EXP). While the processes involved in comparing EXP and PF could suggest more complex effects, for example an interaction of EXP with PF, prior research (McKinney et al. 2002) has instead assumed and found that simple direct effects can capture the influence of EXP and PF on CF. We opted to examine simple direct effects because this is the more established approach in the expectation-confirmation (or disconfirmation) paradigm.

From these comparison processes, we know that EXP provides important baseline information for evaluating transaction performance. Therefore, EXP should influence CF. Furthermore, CF is the consumer's judgment of the actual PF relative to the prepurchase comparison standard (i.e., EXP). The relationship between PF and CF is straightforward: A consumer's judgment of high perceived performance that is greater than his or her expectation in the prepurchase phase results in positive confirmation. Therefore, we propose the following hypothesis.

Hypothesis 6. *A consumer's confirmation* (*CF*) *is related to his or her expectation* (*EXP*).

Hypothesis 7. *A consumer's confirmation* (*CF*) *of his or her expectation is positively related to his or her judgment of positive perceived performance* (*PF*).

Customer satisfaction (*SF*) refers to a customer's cognitive and affective state of fulfillment after the purchase (McKinney et al. 2002). Based on previous studies (Bhattacherjee 2001, McKinney et al. 2002), we conceptualize satisfaction as an affective state representing the consumer's emotional reaction to the entire e-commerce transaction through the selling entity on the Internet. Thus, SF is an output of a customers' subjective judgment resulting from observations of performance (Oliver 1993, 1999). A higher perceived performance than his or her expectation (i.e., a positive confirmation) will lead to a relatively higher level of satisfaction.

Hypothesis 8. *A consumer's satisfaction* (*SF*) *is positively related to the confirmation* (*CF*) *of his or her expectation*.

SF is also a direct result of a consumer's prepurchase EXP (Anderson and Sullivan 1993; Churchill and Surprenant 1982; Oliver 1980, 1993, 1999). Theoretical support for the relationship between expectation and satisfaction comes from adaptation-level theory (Helson 1964), which states that a consumer's satisfaction depends not only on current objective phenomena, but also on prior similar events and subjective expectations. Thus, satisfaction is likely to be influenced in part by expectations. Furthermore, Szajna and Scamell (1993) suggest that individuals adjust their perceptions of satisfaction in line with their prior expectations and to reduce dissonance. This suggests that expectations are not only an important source of information considered (along with confirmation) to arrive at one's level of satisfaction, but also that individuals are biased toward adjusting their satisfaction level so that it is consistent with prior expectations. Consequently, satisfaction levels are likely to be positively related to prior expectations.

Hypothesis 9. *A consumer's satisfaction* (*SF*) *is positively related to his or her performance expectation* (*EXP*).

Several studies (Balasubramanian et al. 2003, Grewal et al. 1999, Ratnasingham 1998a) have shown that trust influences satisfaction directly. Other studies (Dwyer et al. 1987) have supported a positive indirect relationship between trust and satisfaction, suggesting that trust raises levels of performance which then leads to greater satisfaction in the future. Consistent with past research, we expect prepurchase trust to affect postpurchase satisfaction indirectly (via the purchase experience as hypothesized above), and also directly.

In marketing channel research, trust has been defined as business partner dependability. Researchers (Mohr and Nevin 1990) have examined the effect of trust on relationship quality, which is usually reflected as high levels of cooperation and satisfaction along with low levels of conflict. Trust is therefore

considered to be a direct determinant of a firm's satisfaction with its channel partner. Consistent with this line of thinking, Grewal et al. (1999) hypothesized that "the greater the level of trust of a firm in its channel partner, the greater will be the satisfaction of the firm with the exchange relationship" (p. 6). In the consumer behavior literature, Chakravarty et al. (1997) found that respondents considered trust to be the most important factor in determining consumers' satisfaction with their banks.

In the context of e-commerce, many studies (Balasubramanian et al. 2003, Flavian et al. 2006, Kim et al. 2004) have identified Internet consumers' trust and/or satisfaction as vital factors for the success of partner relationships. As Ratnasingham (1998b, p. 162) stated, "Trust is an essential ingredient for electronic commerce in creating loyal and very satisfied customers." Consistent with this statement, Balasubramanian et al. (2003) showed that high levels of investors' trust in an online broker led to greater satisfaction. The relationship between trust and satisfaction is also supported by Festinger's (1957) cognitive consistency theory, which implies that consumers strive for harmony in their beliefs, values, and perceptions. Thus, the level of satisfaction is likely to be low when trust is low and high when trust is high. Despite the importance of the trust → satisfaction relationship over time, to our knowledge no study has examined the direct and indirect trust → satisfaction relationship from a longitudinal perspective. Therefore, based on the arguments above, we posit the following.

Hypothesis 10. *A consumer's postpurchase satisfaction* (*SF*) *is positively related to his or her prepurchase trust* (*TRUST*).

The ultimate endogenous construct of this study, *consumer e-loyalty* (*e-LOYALTY*) has its roots in the consumer behavior literature. In this study, we conceptualize consumer e-loyalty as a positive attitude reflecting three concepts (Rowley and Dawes 1999): retention (i.e., repeated patronage) to the e-tailer website, intention to repurchase from the e-tailer website, and willingness to recommend the website to friends. Obviously, the three sets of behavior that comprise loyalty[2] are extremely desirable, and commercially valuable, to e-tailers. Numerous studies have revealed that customer satisfaction positively affects customer loyalty (Oliver 1999, Singh and Sirdeshmukh 2000, Yi and La 2004).

If consumers are satisfied with a previous transaction, they will be more likely to conduct future transactions through that e-tailers' site. Several researchers have observed that consumer satisfaction is the result of a process of postpurchase evaluation and comparison that ultimately affects the consumer's intention to conduct other transactions in the future (Churchill and Surprenant 1982, Oliver 1980). From a customer's perspective, satisfaction is a specialized form of evaluation to determine the value or worth of what is being used or provided. From a firm's perspective, satisfaction is a critical element of consumer retention that leads to a successful long-term relationship with consumers. Therefore, it is not surprising that customers who are satisfied with a service tend to have a higher usage level than those who are not (Bolton and Lemon 1999) and they are more likely to be a source of word-of-mouth advertising (Anderson 1998). They are also likely to stay loyal to the service because they feel that they are receiving a greater value than they would from a competitor. Therefore, we hypothesize as follows.

Hypothesis 11. *A consumer's e-loyalty* (*e-LOYALTY*) *toward the site is positively related to his or her judgment of positive satisfaction* (*SF*) *with the transaction*.

Finally, we included additional variables (disposition to trust, dollar value, and familiarity with an e-tailer) as controls to recognize their effects on key constructs across the three phases.

[2] Oliver argues that "for satisfaction to affect loyalty, frequent or cumulative satisfaction is required so that individual satisfaction episodes become aggregated or blended" (Oliver 1999, p. 34). While repeat transactions might be the determinant of loyalty in many or most cases, anecdotal evidence and our own experience strongly suggest that intense loyalty can also arise from a single experience. Therefore, we would expect that for new customers a single purchase experience can generate loyalty, and for existing customers another purchase experience can increase loyalty. In this study, we adopted the concept of loyalty suggested by Rowley and Dawes (1999), focusing on one transaction experience of customers from a longitudinal perspective.

4. Research Methodology and Data Collection

This study used two rounds of web-based surveys in a longitudinal design. Most of the instruments were adapted from previous research and modified to fit the context of this research. Some new instruments were developed based on the results of a literature review. A panel of experts reviewed the instruments to ensure their validity and to identify any ambiguous items. A pilot test was conducted prior to collecting data for the field test. The research instruments were tested for reliability, content validity, and construct validity, and necessary changes were made to improve both the content and clarity of the questionnaire. All pilot test respondents were excluded from the data analysis sample.

4.1. Measurement Scales

All but two of the constructs were measured by at least three indicators. The two exceptions were PURCHASE and dollar value, which represent discrete values and therefore can be appropriately measured with a single item. We measured the constructs with 7-point Likert scales. All measurement items (i.e., indicators) are summarized in the appendix along with their factor loadings and eigenvalues. We conceptualized and measured perceived benefit, perceived risk, and perceived performance as aggregations of different manifestations of risk, benefit, and performance, respectively; thus the direction of causality is from indicator to construct (i.e., formative). The other constructs were operationalized as reflective indicators.

4.2. Data Collection

Two rounds of Web-based surveys were administered to a group of students at public universities in the northeastern United States. The first survey comprised all the questions related to prepurchase intentions, including EXP. The second round survey, which contained questions about purchase decision, postpurchase experiences, and future intentions (PF, CF, SF, and e-loyalty), was only administered to students who had participated in the first round survey.

Several studies (Ahuja et al. 2003, Kotkin 1998) show that online consumers are generally younger and more educated than conventional consumers. Thus, while students represent only a portion of the onlineshopper population, they represent a disproportionately large segment of the broader online population. Another major advantage of using student subjects for this study is that our model requires collection of data from the same respondents at two separate time periods so that we can test hypotheses concerning two stages: prepurchase and postpurchase. By using students, we were better able to avoid attrition between data collection points, and thereby avoid a critical threat to validity. Students participated in the study voluntarily for extra credit. Because our study required them to make an online purchase, we conducted this web-based field survey in the early weeks of the semester because students typically need a lot (e.g., books, clothes, CDs, software, travel, a computer) at that time.

Students were first asked to visit at least any two B2C retailer websites to comparison shop[3] for an item of their choice. Then, students were instructed to go through the entire online buying process up to *but excluding* the clicking of the buy button to purchase the product or service. At this point (immediately prior to clicking the buy button), students were randomly assigned to complete one of two questionnaires: one questionnaire asked questions (TRUST, RISK, BENEFIT, WP, and EXP) about the site from which the student was *more* inclined to make a purchase; the other asked the same questions, but about the site from which the student was *less* inclined to make a purchase. This was done to ensure that we had adequate variance in the WP variable, i.e., that we were collecting data that were likely to predict nonpurchases as well as purchases. If we had failed to do this, the data would reflect only a fraction of all consumer transactions—only those that were likely to lead to an intention to purchase. Thus, this research design and data collection method ensures that the study provides a complete picture (i.e., balanced view) by allowing us to analyze the factors that lead to nonpurchases as well as purchases. Finally, after completing the survey, students were asked to purchase the item from their preferred site.

[3] This instruction also reflects typical purchase behavior. Ahuja et al. (2003) asked respondents "how many sites do you visit before making a purchase decision?" About 75% of respondents answered that they visited one to three websites prior to their purchase. Thus, we take the mean value, two.

The second-round survey was conducted three weeks later, after the respondents of the first round survey had received and begun using the item that they had ordered. In this second-round survey, all respondents provided information about the transaction they had made, and responded to additional questions about their transaction experience and loyalty to the e-tailer (PF, CF, SF, and e-LOYALTY).

We also asked respondents to report their detailed transaction information in the first- and second-round surveys. They reported the URL of both sites[4] (i.e., the sites from which they were (1) more inclined and (2) less inclined to purchase). In the first-round survey, we also gathered data on control variables (i.e., disposition to trust, familiarity) and demographics. In the second round survey we gathered data on additional control variables (what product they had purchased, the amount they spent (i.e., dollar value), and the URL of the site from which they had purchased). Then we compared the URLs reported in the first round and second round to make sure that they reported the same site through both rounds.

A total of 512 responses for the first round and 493 responses for the second-round survey were received. After eliminating invalid responses, a total of 468 usable responses (i.e., 258 responses about the site that participants were more inclined to make a purchase from and 210 responses about the site participants were less inclined to make a purchase from) were available for construct validation and hypothesis testing for the prepurchase model. Then, given our interest in consumers' evaluations *after purchase*, 210 of these 468 responses were excluded for the postpurchase analysis because, by design, in the prepurchase phase they had been randomly assigned to report on the website they were less likely to purchase from. As expected, virtually all of the 210 respondents provided prepurchase data on an e-tailer from which they ultimately did not purchase. In the postpurchase phase, all respondents (including these 210) reported about the e-tailer they had *purchased* from because we could not ask them to report their purchase experience about the site from which they did not make a purchase. Thus, these 210 respondents reported on a different e-tailer in the postpurchase phase than they had in the prepurchase phase. Consequently, our analysis used data from all 468 respondents for the prepurchase and 258 respondents for the postpurchase model.

[4] The actual questions were "What is the URL of the site from which you are going to buy?" and "What is the URL of the alternative site that you are considering?"

5. Data Analyses and Results

To test the proposed research model, data analyses for both the measurement model and structural model were performed using partial least squares (PLS) (PLS-Graph version 3.01060), logistic regression, and AMOS 6.0. PLS-Graph and AMOS are considered complementary in data analysis (Chin et al. 2003). Two PLS structural models (one for the prepurchase phase and the other for the postpurchase phase) were analyzed using the bootstrapping method; a single PLS model cannot handle the different sample sizes for different variables.

5.1. Reliability

Internal consistency was evaluated using Cronbach's alpha, composite reliability, and average variance extracted (AVE) (Fornell and Larcker 1981). Cronbach reliability coefficients were all higher than the minimum cutoff score of 0.70 (Nunnally and Bernstein 1994) (see Table 1). All composite reliability coefficients were greater than 0.7, and all constructs had an AVE of at least 0.5, indicating adequate internal consistency (Fornell and Larcker 1981).

5.2. Construct Validity

We conducted an exploratory factor analysis incorporating all items of all reflective constructs using a Direct Oblimin[5] rotation with Kaiser Normalization. The items for each construct loaded onto only one factor and all cross-loadings were well below the standard maximum cutoff of 0.40.[6] We also conducted a factor analysis for each construct. All item loadings were greater than 0.50 with an eigenvalue greater than 1.0 (see appendix), indicating acceptable convergent validity. To test discriminant validity, we

[5] This approach is appropriate because we have theoretical reasons (based on ECT and the extended valence framework) to expect that the research constructs (i.e., loyalty, satisfaction, confirmation, trust, intention to purchase, etc.) are correlated in reality.

[6] These results are not reported because of space limitations; they are available from the corresponding author on request.

Table 1 Descriptive Statistics and Reliability Coefficients for Constructs

Constructs	Types of indicators	Mean	S.D.	Alpha	Composite reliability	AVE	Scales adapted from
Consumer trust (TRUST)	R	5.32	1.04	0.85	0.91	0.77	(Gefen 2000, Jarvenpaa et al. 2000, Parasuraman et al. 1988)
Perceived risk (RISK)	F	4.11	1.28	NA	NA	NA	(Forsythe et al. 2006, Jarvenpaa et al. 2000, Kohli 1989)
Perceived benefit (BENEFIT)	F	5.36	1.09	NA	NA	NA	(Forsythe et al. 2006, Moore and Benbasat 1991)
Willingness to purchase (WP)	R	5.03	1.26	0.79	0.88	0.71	(Gefen 2000, Jarvenpaa et al. 2000)
Expectation (EXP)	R	5.17	0.88	0.85	0.80	0.57	(Fornell et al. 1996)
Perceived performance (PF)	F	5.20	0.87	NA	NA	NA	(Bhattacherjee 2001, Davis 1989)
Confirmation (CF)	R	5.21	0.85	0.92	0.96	0.84	(Bhattacherjee 2001)
Satisfaction (SF)	R	5.64	0.99	0.84	0.96	0.85	(Bhattacherjee 2001)
Consumer e-loyalty	R	5.32	0.86	0.85	0.87	0.68	(Harris and Goode 2004, Kim 2004, Lee and Turban 2001)
Disposition to trust	R	4.66	1.28	0.81	0.87	0.63	(Gefen 2000)
Familiarity	R	4.68	1.74	0.95	0.96	0.84	(Gefen 2000)

Notes. R: reflective, F: formative; $n = 468$ for the constructs in the prepurchase phase and $n = 258$ for the constructs in the postpurchase phase. NA—not applicable: Because formative measures need not covary, the internal consistency of formative items is not applicable (Chin 1998).

conducted between-constructs tests[7] recommended by Anderson and Gerbing (1988) using AMOS 6.0 (see Table 2). In each case, the significant difference in the corresponding chi-square statistics indicates that the constructs are statistically distinct at the 95% or 99% confidence levels.

According to Fornell and Larcker (1981), constructs have adequate discriminant validity if the square root of the AVE for a construct is higher than the variance shared between the construct and other constructs in the model. As can be seen in Table 3, in all cases the correlations between each pair of constructs were lower than the square root of the AVE for the particular construct. In sum, these results as well as the factor analyses confirm that all the constructs were empirically distinct.

5.3. Testing the Structural Model

Figure 4 presents the results of the structural model testing. In the prepurchase phase, TRUST had a strong positive effect on a consumer's WP. TRUST also had a strong negative effect on RISK, which had a downstream negative effect on WP. The effects of TRUST on BENEFIT and of BENEFIT on WP were significantly positive. EXP also had a positive, significant effect on WP. To estimate the effect size of the bivariate relationship between WP and PURCHASE, we conducted a logistic regression analysis (Table 4) and found that WP had a strong effect on PURCHASE (beta $= 0.447$, R-sq $= 0.21$; $p < 0.001$).

All three control variables had strong effects on TRUST. Dollar value influenced TRUST and RISK, implying that consumers appear to perceive less trust and more risk when purchasing more expensive products or services. Consistent with prior studies (Bhattacherjee 2002, Gefen 2000), familiarity had strong effects on several constructs (TRUST,WP, PURCHASE, and e-LOYALTY) across all three purchase phases. In sum, the results fully support all prepurchase and purchase phase hypotheses. In terms of sheer magnitude, BENEFIT appeared to have a stronger effect on WP (path coefficient $= 0.372$, $p < 0.001$) than did other prepurchase predictors.

Turning to model fit, the R-square values for RISK, WP, BENEFIT, and PURCHASE were 0.285, 0.457, 0.303, and 0.208 respectively, indicating that the model explains substantial variation in these variables. For example, the R-square value for WP implies that the causes specified in the model, TRUST, RISK, and BENEFIT, jointly explain 46% of the total variance in purchase intention.

[7] Each pair of constructs was sequentially accommodated in two models—one where the covariance between the pair of constructs was free (unconstrained) and a second where the covariance between the pair was constrained to be equal to 1 (implying that the constructs are indistinguishable).

Table 2 Test of Discriminatory Validity for the Constructs

Description	Covariance	CFI*	χ^2 (df) (constrained)	χ^2 (df) (unconstrained)	Difference**
Consumer trust with					
Perceived risk	−0.54	0.996	227.948 (9)	10.286 (8)	217.662
Perceived benefit	0.48	0.937	113.5 (20)	91.242 (19)	22.258
Willingness to purchase	0.56	0.979	40.662 (9)	26.171 (8)	14.491
Expectation	0.58	0.981	35.295 (9)	19.277 (8)	16.018
Perceived performance	0.30	0.994	62.108 (14)	17.570 (13)	44.538
Confirmation	0.17	0.876	253.877 (14)	190.539 (13)	63.338
Satisfaction	0.33	0.988	71.230 (14)	28.392 (13)	42.838
e-Loyalty	0.32	0.916	140.033 (20)	102.050 (19)	37.983
Perceived risk with					
Perceived benefit	−0.36	0.969	166.438 (20)	47.113 (19)	119.325
Willingness to purchase	−0.53	0.992	162.341 (9)	13.000 (8)	149.341
Expectation	−0.41	0.932	152.408 (9)	31.031 (8)	121.377
Perceived performance	−0.32	0.980	150.663 (14)	23.731 (13)	126.932
Confirmation	−0.18	0.914	268.760 (14)	184.803 (13)	83.957
Satisfaction	−0.34	0.990	160.645 (14)	23.537 (13)	137.108
e-Loyalty	−0.28	0.902	197.530 (20)	98.255 (19)	99.275
Perceived benefit with					
Willingness to purchase	0.72	0.939	99.459 (20)	94.003 (19)	5.456
Expectation	0.47	0.936	93.966 (20)	71.562 (19)	22.404
Perceived performance	0.57	0.945	99.443 (27)	85.132 (26)	14.311
Confirmation	0.26	0.826	251.016 (27)	209.375 (26)	41.641
Satisfaction	0.33	0.968	113.952 (27)	76.212 (26)	37.74
e-Loyalty	0.38	0.913	173.622 (35)	146.143 (34)	27.479
Willingness to purchase with					
Expectation	0.57	0.983	33.117 (9)	18.219 (8)	14.898
Perceived performance	0.32	0.961	77.264 (14)	42.298 (13)	34.966
Confirmation	0.23	0.876	226.394 (14)	183.756 (13)	42.638
Satisfaction	0.35	0.994	55.253 (14)	20.51 (13)	34.743
e-Loyalty	0.40	0.906	140.398 (20)	116.325 (19)	24.073
Expectation with					
Perceived performance	0.38	0.959	64.893 (14)	31.166 (13)	33.727
Confirmation	0.16	0.913	249.330 (14)	187.304 (13)	62.026
Satisfaction	0.36	0.990	63.164 (14)	23.285 (13)	39.879
e-Loyalty	0.35	0.913	111.871 (20)	78.234 (19)	33.637
Perceived performance with					
Confirmation	0.46	0.865	217.291 (20)	194.379 (19)	22.912
Satisfaction	0.46	0.979	71.884 (20)	45.681 (19)	26.203
e-Loyalty (e-LOYALTY)	0.62	0.913	122.933 (27)	111.972 (26)	10.961
Confirmation (CF) with					
Satisfaction (SF)	0.34	0.859	245.427 (20)	215.404 (19)	30.023
e-Loyalty (e-LOYALTY)	0.36	0.897	301.076 (27)	271.738 (26)	29.338
Satisfaction (SF) with					
e-Loyalty (e-LOYALTY)	0.82	0.948	119.462 (27)	112.633 (26)	6.829

*The reported CFI (comparative fit index) values are from the unconstrained models.
**The χ^2 difference with 1 degree of freedom must be 3.841 (6.635) or greater to satisfy the null hypothesis that the two models are different at a 95% (99%) confidence interval.

All postpurchase hypothesized paths were significant at the $p < 0.05$ level: EXP had a negative effect on CF; PF had a strong positive effect on CF; and CF also had a strong positive effect on SF. The path between TRUST and SF was significant at the $p < 0.01$ level, suggesting that consumer satisfaction in the postpurchase phase was significantly related to consumer trust in the prepurchase phase. Finally,

Table 3 Correlations of Latent Variables

Constructs	1	2	3	4	5	6	7	8	9	10	11
1. Consumer trust	**0.88**										
2. Perceived risk	−0.48	**NA**									
3. Perceived benefit	0.54	−0.25	**NA**								
4. Willingness to purchase	0.52	−0.32	0.56	**0.84**							
5. Expectation	0.64	−0.36	0.41	0.53	**0.75**						
6. Perceived performance	*0.35*	*−0.22*	*0.46*	*0.35*	0.41	**NA**					
7. Confirmation	*0.30*	*−0.25*	*0.19*	*0.28*	0.25	0.41	**0.92**				
8. Satisfaction	*0.41*	*−0.26*	*0.30*	*0.33*	0.36	0.55	0.66	**0.92**			
9. Consumer e-loyalty	*0.32*	*−0.25*	*0.31*	*0.35*	0.32	0.56	0.51	0.59	**0.83**		
10. Disposition to trust	*0.23*	*−0.01*	*0.09*	*0.09*	0.12	0.05	0.10	0.08	0.07	**0.79**	
11. Familiarity	*0.35*	*−0.22*	*0.39*	*0.41*	0.31	0.18	0.09	0.13	0.16	0.09	**0.92**

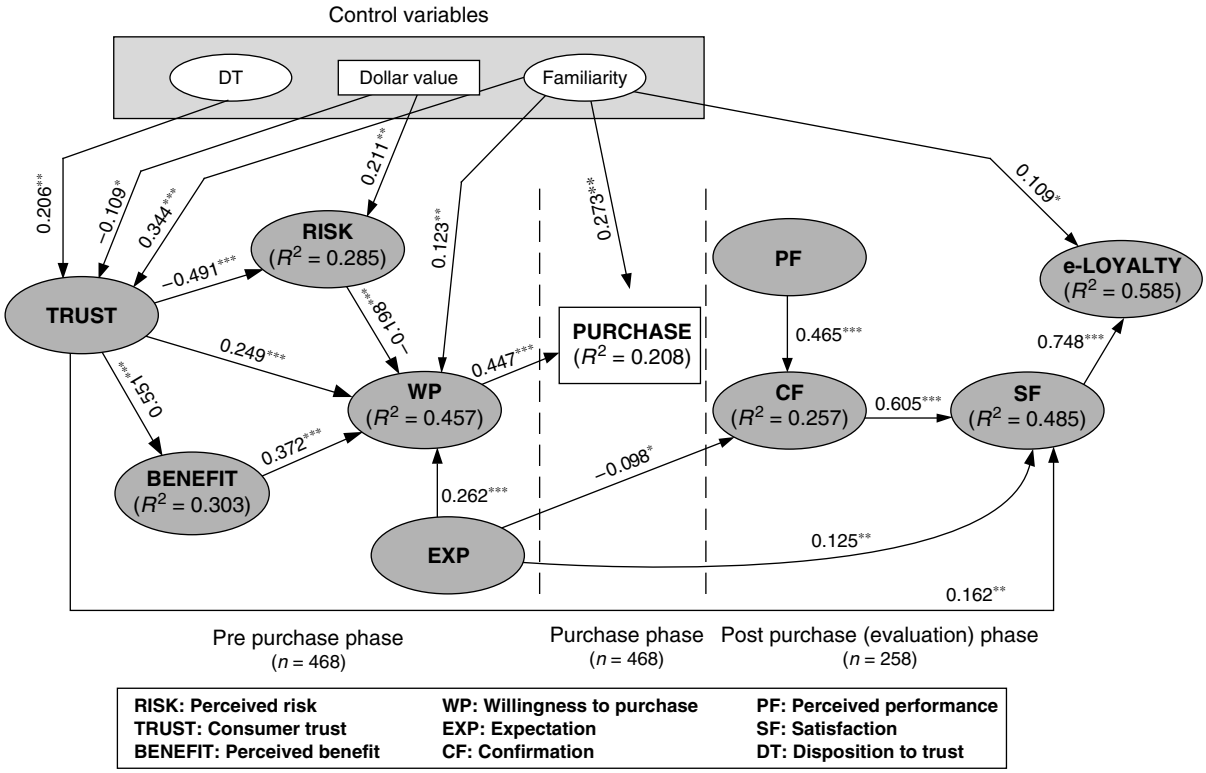
Notes. (1) Diagonal elements are the square root of average variance extracted. These values should exceed the interconstruct correlations for adequate discriminant validity. (2) The italic values show the correlations between prepurchase and postpurchase variables, which are calculated based on the 258 participants used for testing the postpurchase model. (3) NA—Does not apply for the formative measures.

the path coefficient between SF and e-LOYALTY was highly significant ($p < 0.001$). The R-square of e-LOYALTY was 0.592, indicating that the model explains nearly 60% of the variance in consumers' loyalty.

6. Discussion and Conclusion

This study provides several important findings. First, an Internet consumer's trust in an e-tailer directly and indirectly affects a consumer's intention to make transactions through the e-tailer's website. This

Figure 4 Structural Model Results



Note. *Significant at the 0.05, **significant at the 0.01, ***significant at the 0.001 level.

Table 4 Summary of Statistics and LOGISTIC Regression Results

Purchase	WP mean	WP S.D.	*N*
Not purchase (0)	4.66	1.29	207
Purchase (1)	5.32	1.15	261

Results of logistic regression analysis

	Chi-square	d.f.		Sig.
Model	33.069	1		0.0000
−2 log likelihood (L)			609.47	
Goodness of fit (G)			466.82	

Variable	B	S.E.	Wald	Sig	R^2
WP	0.447	0.08	29.90	0.0000	0.208
Constant term	−2.007	0.42	22.81	0.0000	

result provides evidence that a consumer's trust has a strong positive *direct effect* on the consumer's Internet transaction intention, corroborating findings by McKnight et al. (2002b), Gefen (2000), and Jarvenpaa et al. (2000) in the information systems and e-commerce areas. A consumer's perception of risk reduces transaction intention, and trust strongly affects perception of risk. From these results, we infer that trust also has a strong *indirect effect* on transaction intention through the perception of risk. Similarly, a consumer's perception of benefit increases the transaction intention, and trust strongly affects the perception of benefit. In other words, trust plays a role in reducing the consumer's perceived risk and in increasing perceived benefit, which then increase the consumer's WP through the site.

Second, all the hypotheses from the extended valence framework along with the hypothesized path of TRUST → WP in the prepurchase phase of the model were fully supported. These findings provide strong support for the valence framework (i.e., Internet consumers make web transaction decisions based on their perceptions of benefit and risk as well as their trust in the e-tailer). Further studies will be needed to replicate these findings and test their generalizability.

Third, the results of the postpurchase phase also fully support ECT contentions that satisfaction is a strong predictor of e-loyalty; that confirmation has a relatively strong positive effect on satisfaction; that a consumer's expectation has a strong effect on satisfaction; that a consumer's expectation has a negative influence on confirmation and a positive effect on satisfaction; and, finally, that perceived performance is positively associated with confirmation. One particularly important finding in the postpurchase phase is that satisfaction is a strong predictor of a consumer's e-loyalty ($R^2 = 0.585$). This result is consistent with the results of conventional consumer/user satisfaction studies in information systems and service marketing (Anderson and Sullivan 1993, Bhattacherjee 2001, Oliver 1980).

Expectation and confirmation appeared as strong determinants of satisfaction. A consumer's expectation seems to provide a baseline or reference level for consumers to evaluate e-commerce transaction performance. A higher level of expectation leads to enhanced satisfaction, whereas a lower level of expectation leads to reduced satisfaction. This expectation → satisfaction relationship has been supported by previous studies on cognitive dissonance theory (Festinger 1957), and is also consistent with adaptation-level theory (Helson 1964), which asserts that individuals strive to increase pleasurable stimulation and to decrease painful experiences. Interestingly, expectation also seems to have a negative influence on a consumer's confirmation whereas perceived performance has a strong positive effect on the consumer's confirmation. This can be explained by recognizing that the higher the expectation, the harder it may be to fulfill. Consequently, lower expectations and/or higher perceived performance lead to heightened confirmation, which in turn positively affects satisfaction and repurchase intentions.

Fourth, the longitudinal trust → satisfaction relationship (i.e., trust in the prepurchase phase and satisfaction in the postpurchase phase) is confirmed in e-commerce, which is consistent with the results of previous nonlongitudinal trust-satisfaction studies (Balasubramanian et al. 2003, Ratnasingham 1998a). More important, this study finds that trust has a longer term impact on the future relationship (i.e., e-loyalty) through satisfaction, a key outcome of the purchase process. This implies that trust affects not only a consumer's immediate purchase decision, and but also the longer-term relationship.

6.1. Implications for Theory

This study has both theoretical and practical implications. First, the extended valence framework and ECT

are adapted within the foundation of the TRA to provide the basic logical sequence (beliefs/attributes → transaction intention → transaction behavior → evaluation of transaction outcomes → future intention) of the variables included in our model. From a theoretical standpoint, few empirical studies in e-commerce have made a distinction between prepurchase and postpurchase phenomena. To our knowledge, this is the first study that has tested whether a consumer's prepurchase trust impacts postpurchase satisfaction through a combined model of consumer trust and satisfaction developed from a longitudinal viewpoint. It is also the first to empirically examine a longitudinal model of factors that influence purchase and repurchase intentions and behaviors.

Second, this study bridges two important factors (i.e., trust and satisfaction) from two theories (i.e., the extended valence framework and ECT) over three longitudinal phases (i.e., prepurchase, purchase, postpurchase) in the e-commerce context. We believe that this type of longitudinal study provides comprehensive insights and evidence on a consumer's entire decision-making process from early perceptions (trust, risk, and benefit), through transaction intention, expectation, transaction behavior, perceived performance, confirmation, satisfaction, and the longer-term relationship. Consequently, we also expect that this study will have an impact on future research in the area of trust and satisfaction in B2C e-commerce.

Third, in terms of data collection, we analyzed data from both "successful" cases (i.e., the respondents made a purchase from the website they reported on in the prepurchase phase) and "unsuccessful" cases (the respondents reported on a website from which they ultimately did not purchase). To our knowledge, most e-commerce studies have collected data concerning consumer's successful purchase experiences. Yet, successful cases represent only a fraction of all consumer transaction behaviors. Our study overcomes this fractional view, and by doing so, provides a more balanced and comprehensive view of consumers' e-commerce transaction behaviors.

6.2. Implications for Practice

It is critical that e-tailers understand the factors that lead not only to initial purchase decisions, but also the factors that affect consumers' satisfaction and ultimately their e-loyalty. Our study indicates that e-tailers should put special emphasis on managing and maintaining their consumers' trust, perceived risk, perceived benefits, and expectations because all four factors are strong predictors of the consumer's initial transaction intention. Expectations are doubly important because they influence not only the initial purchase decision, but also postpurchase evaluations. Trust is crucial because it directly affects a consumer's WP, indirectly influences the WP by shaping consumers' perceptions of risks and benefits, and influences consumers' satisfaction, which ultimately affects e-loyalty. Thus, trust fosters the initial purchase experience, shapes the evaluation of that experience, and by doing so provides a foundation for future repurchases. How e-tailers build and maintain trust is of course another important issue; however it is beyond the scope of our present study. At a minimum it is clear that trust and consumer satisfaction are stepping stones toward long-term relationships with consumers.

We recommend that e-tailers consider the trust-building process as comprising offline as well as online activities. Consumers' trust in an e-tailer can be built through online activities related to the electronic market place (e.g., a website that conveys trustworthiness). Reliable IT can provide high quality online transaction services including simple and intuitive navigation, quality product information, security, privacy, quick response time, etc., which in turn can help consumers feel comfortable about providing personal (e.g., address) and financial (e.g., credit card number) information online. Offline activities refer to pre- and post purchase factors such as reputation, disclosure of security and privacy assurances, satisfaction guarantee policies, returns and refunds assurance, reliable delivery fulfillment, superior after-sales service, etc. While consumers might learn about these offline factors via web searches, they may also learn about them vicariously, for instance through the media or from discussions with other Internet consumers or the media. Finally, it is important for e-tailers to remember that longer-term relationships must be established by providing their consumers with satisfactory initial purchase experiences.

Our study also highlights the importance of managing consumers' perceptions of benefits. Along with consumer trust and perceived risk, perceived benefit is a strong predictor of a consumer's purchase intention. Compared to the traditional mode of shopping, Internet shopping has many benefits such as convenience, the opportunity to save money and time, access to a wide variety of products, etc. Our results suggest that consumers' perception of e-commerce benefits is a major motivation for making an online transaction. Thus, e-tailers should do their best to communicate and provide benefits to their customers. Staying at the front of the technology and marketing curve by using emerging technologies to provide or extend services, could be one way for an e-tailer to increase their customers' perceived benefits. For example, some consumers want to shop 24 hours a day, seven days a week, from almost anywhere. If an e-tailer's website provides a convenient environment for mobile users with a high bandwidth connection, consumers who hear about this service—even if they are not users of the service—are likely to perceive that the e-tailer offers more convenience benefits.

6.3. Limitations and Future Directions

Several researchers (e.g., Singh and Sirdeshmukh 2000) have noted that trust develops gradually over time. This suggests that trust in the aftermath of a purchase may also be an important factor in predicting satisfaction and repurchase intentions. The major goal of the present study was to bridge two important factors (i.e., prior trust and subsequent satisfaction) from two theories (i.e., the extended valence framework and ECT) over three longitudinal phases (i.e., prepurchase, purchase, and postpurchase) in an electronic commerce context. In the interest of parsimony, we did not measure postpurchase trust. Subsequent research may consider whether a measure of subsequent trust would add explanatory power beyond that of prior trust and subsequent satisfaction. Future research may also consider other antecedents of loyalty, such as commitment and relational orientation.

We also did not differentiate between participants who had previously patronized a particular vendor and those who had not previously patronized the vendor. Thus, this study should be viewed as an investigation into the effects of prepurchase trust and subsequent satisfaction not only on initial purchases, but also on purchases more generally. Future research might consider whether the dynamics differ for initial purchases versus follow-up purchases. Also, given the increasingly global nature of e-commerce, future research should consider the applicability of the model to cultures outside the United States.

Although students comprise a relatively large and important segment of Internet shoppers in general, we recognize that students may not be wholly representative of the broader population of Internet consumers. Therefore, as with most studies, research will be needed to assess the generalizability of the findings. To collect data in a natural setting while preserving anonymity, we gathered all data, including actual transaction behaviors, via self-report surveys. Many studies (Grazioli and Jarvenpaa 2000, Pavlou and Fygenson 2006, Pavlou and Gefen 2004, Venkatesh and Davis 2000) have similarly measured transaction or usage behavior by self-report survey rather than direct observation. The relatively objective nature of a purchase (it is a dichotomous decision reflecting the purchase of a specific product at a specific price) reduces the likelihood of bias. Nonetheless, our method does present a possibility of method bias.

In the trust literature, scholars have identified several types of relationships between trust and risk, including mediated relationships focusing on the indirect and direct effects of trust and risk (Grazioli and Jarvenpaa 2000, McKnight et al. 2002b), and moderated relationships focusing on the potential interaction between them (Bhattacherjee 2002, Mayer et al. 1995, McKnight and Chervany 2002). In this paper, we examined the factors (perceived risk and benefit) that were likely to mediate the effects of trust on purchase intentions. However, note that reverse relationships (perceived risk and perceived benefit as determinants of consumer trust), and/or interactions of trust and perceived risk/benefit are also possible. Thus, future work should consider the possibility of reverse causal relationships and the moderating effects of trust and risk on consumers' transaction decisions in e-commerce.

Appendix A. Measurement Items for Constructs

Constructs	Measurement items	Loading
Consumer trust (TRUST)*	This site is trustworthy.	0.899
	This website vendor gives the impression that it keeps promises and commitments.	0.910
	I believe that this Website vendor has my best interests in mind.	0.830
Eigenvalue		2.32
Percent of explained variance		77.43
Perceived risk (RISK)*	Purchasing from this website would involve more product risk (i.e., not working, defective product) when compared with more traditional ways of shopping.	0.822
	Purchasing from this website would involve more financial risk (i.e., fraud, hard to return) when compared with more traditional ways of shopping.	0.848
	How would you rate your overall perception of risk from this site?	0.807
Eigenvalue		2.04
Percent of explained variance		68.23
Perceived benefit (BENEFIT)*	I think using this website is convenient.	0.786
	I can save money by using this website.	0.631
	I can save time by using this website.	0.870
	Using this website enables me to accomplish a shopping task more quickly than using traditional stores.	0.831
	Using this website increases my productivity in shopping (e.g., making purchase decisions or finding product information within the shortest time frame).	0.823
Eigenvalue		3.14
Percent of explained variance		62.79
Willingness to purchase (WP)	I am likely to purchase the products(s) on this site.	0.829
	I am likely to recommend this site to my friends.	0.855
	I am likely to make another purchase from this site if I need the products that I will buy.	0.840
Eigenvalue		2.12
Percent of explained variance		70.77
Expectation (EXP)	How would you rate your overall expectations of the quality of the purchasing (process) from this website?	0.837
	How well does the website fit your personal needs?	0.788
	How would you rate your expectations that things would go wrong in buying from this website?	0.620
Eigenvalue		1.70
Percent of explained variance		56.84
Perceived performance (PF)*	Using this website improved my performance in shopping.	0.802
	Using this website increased my productivity in shopping.	0.818
	Using this website enhanced my effectiveness in shopping.	0.770
	Overall, using this website is useful in shopping.	0.844
Eigenvalue		3.19
Percent of explained variance		63.96
Confirmation (CF)	My experience with using this website was better than what I had expected.	0.916
	The product and service provided by this website was better than what I had expected.	0.920
	Overall, most of my expectations from using this website were confirmed.	0.909
	The expectations that I have about this website were correct.	0.927
Eigenvalue		2.24
Percent of explained variance		86.32

continued

Appendix A. (continued)

Constructs	Measurement items	Loading
Satisfaction (SF)	How do you feel about your overall experience of the purchase through this website:	
	Very dissatisfied/Very satisfied.	0.922
	Very displeased/Very pleased.	0.930
	Very frustrated/Very contented.	0.930
	Absolutely terrible/Absolutely delighted.	0.899
Eigenvalue		3.38
Percent of explained variance		84.70
e-Loyalty (e-LOYALTY)	If I were to buy the same product again, I would likely buy it from this website.	0.838
	I am likely to return to this website for my next purchase.	0.887
	I am likely to make another purchase from this site in the next year.	0.806
	I intend to continue using this website rather than discontinue its use.	0.855
	I will recommend this website to friends.	0.821
Eigenvalue		3.150
Percent of explained variance		83.01
Familiarity (FAM)	Overall, I am familiar with this site.	0.915
	I am familiar with searching for items on this site.	0.921
	I am familiar with the process of purchasing from this site.	0.951
	I am familiar with buying products from this site.	0.928
Eigenvalue		3.45
Percent of explained variance		86.26
Disposition to trust (DT)	I generally trust other people.	0.838
	I generally have faith in humanity.	0.828
	I feel that people are generally reliable.	0.856
	I generally trust other people unless they give me reasons not to.	0.802
Eigenvalue		2.76
Percent of explained variance		69.09

*Items are treated as formative indicators. The factor loadings, eigenvalues, and percent of explained variance reflect statistics from an exploratory factor analysis conducted for each individual construct (e.g., TRUST) using the possible sample size from the main study data for each construct (i.e., $n = 468$ for the constructs in the prepurchase phase and $n = 258$ for the constructs in the postpurchase phase).

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